THE 18th ANNUAL CIO 100 AWARDS

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the TOP 100

Big Goals » Big Risks » Big Wins! How They Did It

It all begins on Page 40

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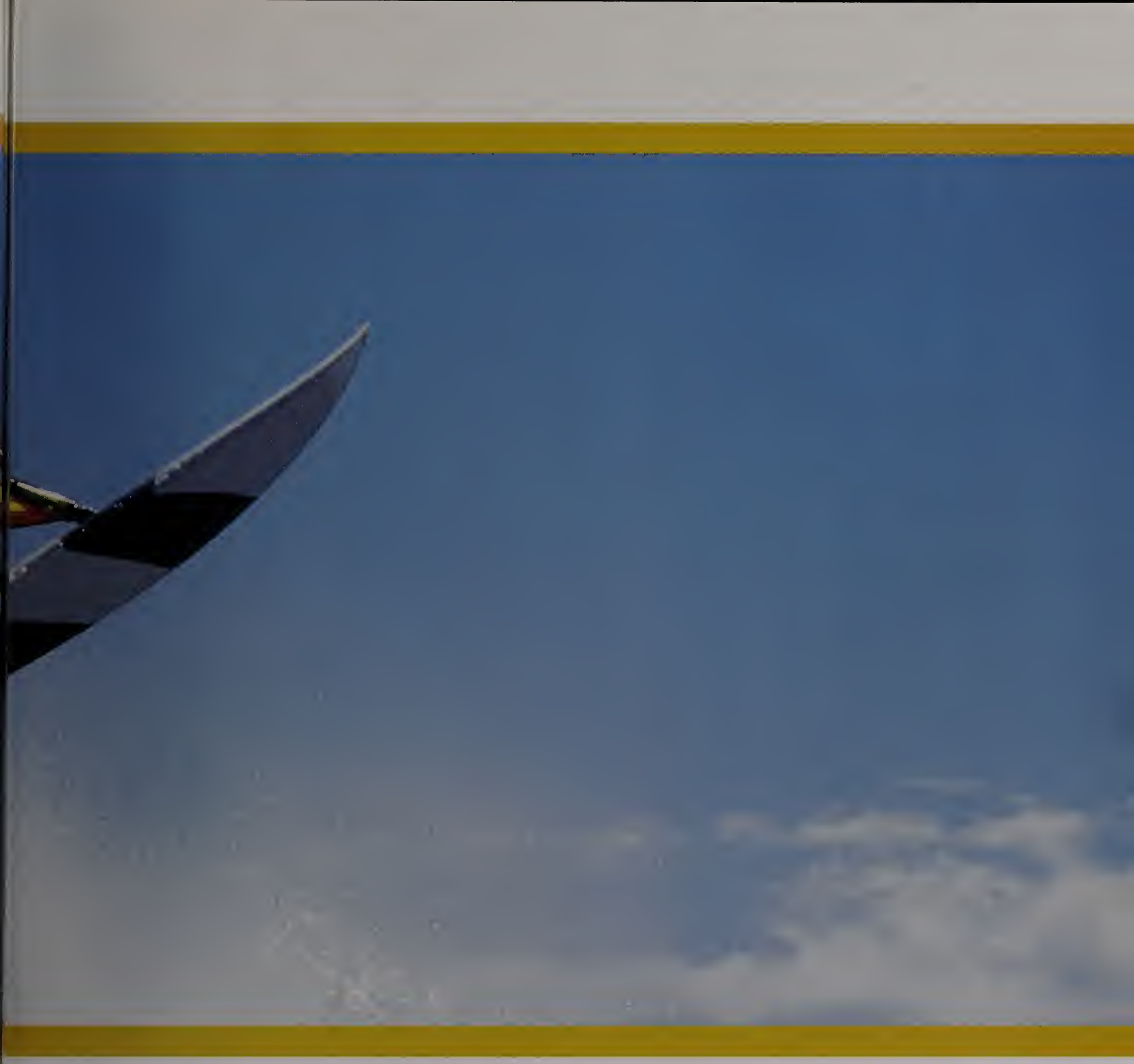

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AUGUST/15/2005 | VOL/18 | NO/21

the BOLD 100

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Boldness is the willingness to assume significant risk for the sake of great reward. This year's honorees had the drive to reach for the prize, the guts to embrace the dangers, and the discipline to create a mitigation plan and stick to it. We can learn from them.
Feature by David Rosenbaum

THE BOLD 100 HONOREE SURVEY | CIO.COM
We asked our CIO 100 honorees to identify the cultural, organizational, technological and spiritual factors that helped their organizations both develop a bold culture and develop and execute bold initiatives. You can find the entire survey at **www.cio.com/research.**

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A service-oriented architecture can be a powerful tool for changing your business—or a good way to boil the ocean. The keys to a successful SOA project are setting limits, mitigating risks, and giving the business what it wants and needs.
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Tom Nelson, the CEO of CIO 100 honoree National Gypsum, guided his company's bold use of the Internet. But he's learned to demand proof of value before embarking on any IT-fueled strategies. **A View from the Top interview by Elana Varon**

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Dare to test your understanding of boldness with this quiz based on our exclusive survey. **Quiz by Edward Prewitt**

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ING Insurance Americas CIO Dave Gutierrez on budgets: "We don't want good ideas to go away just because they're not funded."

Constellation Energy CIO Beth Perlman on leadership: "It's never easy to change, and there's always a squeaky wheel."

CompuCredit CIO Guido Sacchi on technology: With an SOA, "the marginal cost for putting on the next Web service is zero."

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Column by Michael Schrage

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Wh@t's Hot Online

Our First-Ever CIO Bold 100 Microsite
Every year, we list the CIO 100 honorees on the Web as well as in print. But this year we've gone one bold step further online by compiling the **CIO 100 MICROSITE**. Ever wondered which of the honorees are in your industry? Or how many of the winners are in your size company? Now you can sort on the winners to come up with the answers you're looking for. To access the site, go to **www.cio.com/081505**.

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Gut Instincts

We love them, but they'll only take you so far

About 10 years ago, a friend, an experienced diver, invited me to participate in an expedition to the deck of the *Andrea Doria*, a famous wreck lying about 190 feet below the waves far off the coast of Long Island.

I immediately said, "Sign me up."

I was an experienced diver. At least, with about 25 or 30 dives under my belt, I fancied myself one. Just the year before, I had descended to 185 feet off the coast of Guadeloupe.

My gut instinct told me this adventure would be just the thing to energize me and get me over the hump of a little midlife crisis I was having.

But then I started to read up on the wreck, and I discovered that a number of divers had died on it.

That didn't sound so good.

Then it occurred to me that most of my diving had taken place in the Caribbean. In warm, calm, clear waters. Not the North Atlantic.

And perhaps, come to think of it, 25 or 30 dives wasn't that many after all.

So I called my friend and boldly told him, "Forget it," a decision I've never regretted.

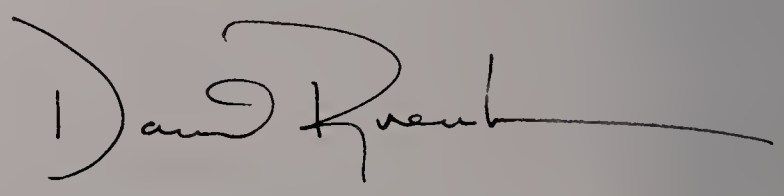
My gut instinct was wrong. It was wrong because it was not experience-based. Diving to great depths in the icy, gloomy North Atlantic was something I was not (after some research and thought) prepared for.

And that's really why we do these CIO 100 issues. Not just to celebrate our honorees (although that's certainly a worthy mission) but to tell their stories so that your decisions, your projects, your strategies and implementations—your adventures—can be informed by the experiences of others.

The business book of the season is *Blink*, Malcolm Gladwell's ode to the power of intuitive decision making. That's an extremely seductive notion because those in positions of authority (CIOs, managing editors, people like that) tend to adore their gut instincts. We often believe gut instinct is what's gotten us to where we are: the big desk in the big office where people actually have to listen to us when we speak.

But unless it's informed by experience, going with your gut is a terrible idea. When it is guided by experience, however, it's the ideal platform for decision making.

With our Bold 100, we hope to provide you with that platform.



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On Leading from Behind

I had a mixed reaction to "Buttressing the Business" [June 15]. I agree that "selling" projects is the wrong approach. I have argued for years with colleagues about who should justify a project. Many years ago, in front of senior managers, I was put on the spot by an executive sponsor about the savings a technology would produce. I responded that the technology would produce no savings, since it could be used with the same people and processes that she had in place at the time. Only the organizations that control the people and processes can stand up and justify (read: sell) a project.

My issue with author Michael Schrage's position is the substitution of "enable" over "lead." Unfortunately, this mind-set could set up IT to go back into the back room. We need to be careful to at least maintain what small amount of credibility the discipline has developed. An attitude that we should only enable can quickly lead to one of only being an implementer and order taker. Leadership comes in many forms, including a collaborative experience where problems and opportunities are identified and options to address them are developed.

I don't think Schrage intended to suggest that CIOs take a backseat at a time when CEOs are looking for more leadership and business acumen. I don't remember where I first heard the phrase but I prefer to use the phrase *lead from behind* rather than *enable*, as it reminds us that leadership is still part of the role.

JIM KLOTZ
Senior VP and CIO
The PMA Insurance Group

I read with interest "Buttressing the Business." I just retired from Ace Hardware as its CIO after 25 years with the company and 40 years in the IT business. I've been writing articles about this subject for many years.

It is critical to convince the IT community that they must become collaborative with their users rather than forcing down users' throats systems that those users may or may not need. This tendency on the part of some CIOs is why most of them have short careers.

PAUL M. INGEVALDSON
Retired CIO
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IT Challenge: Balance Between Old and New

In "Who's Mining the Store" [May 15], I like what 7-Eleven CEO James Keyes said was the one thing he would change about IT: "Achieving the right balance between finishing what we've got versus keeping an eye on new and better technology is the challenge."

That is so true. We are currently facing the same issues, where we have our lean IT staff focusing on three bigger projects, while many smaller projects that can have a big impact on productivity lie dormant.

Thanks for opening my eyes to that fact.

MIKE GENTRY
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Laugh Lines

"No Fun of Any Kind" [May 1] was right on target. I believe the most important metric to a successful organization might in fact be the "laugh metric." Pause and count the number of times you hear laughter—jolly, heartfelt laughter—in your organizations during the course of the day. I would bet my salary that the financial performance of any given company is directly proportional to that company's laugh metric.

Senior executives need to lighten up and take themselves less seriously. Their teams will follow suit and business success will improve as a natural consequence.

DALE SANDERS
VP and CIO
Northwestern Medical
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I always tell my folks that if they're not having fun, they should go home. I've never had anyone take me up on it. But if they did, I'd allow them to take the day off to have some fun—and I'd take a deeper look at what we're doing to find out how we can make service to our customers more fun.

Without fun, we won't enjoy our jobs. And without fun, we won't enjoy each other either. I find that teams achieve high performance only when they enjoy each other.

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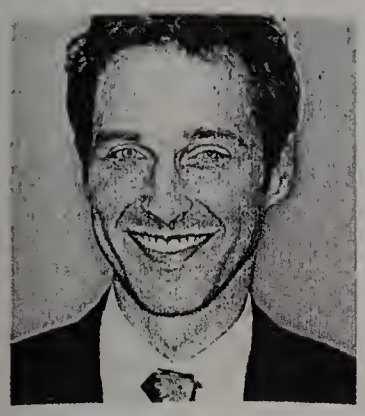

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trendlines

EDITED BY ELANA VARON

NEW * HOT * UNEXPECTED

Mobile IT Calms London After Bombings

London commuters, using their mobile phones, crowded into Victoria Station July 7, as bus service resumed following that morning's bombings.

WIRELESS The morning of July 7 began normally enough for Alden Zecha, CFO and IT director with PrivatSea, a London-based company that offers yachting services. But as he arrived on foot at the Underground station near his home, he heard announcements directing commuters to evacuate the station and overheard talk about an explosion. His first reaction was skepticism: "You never know about those kinds of rumors," he says.

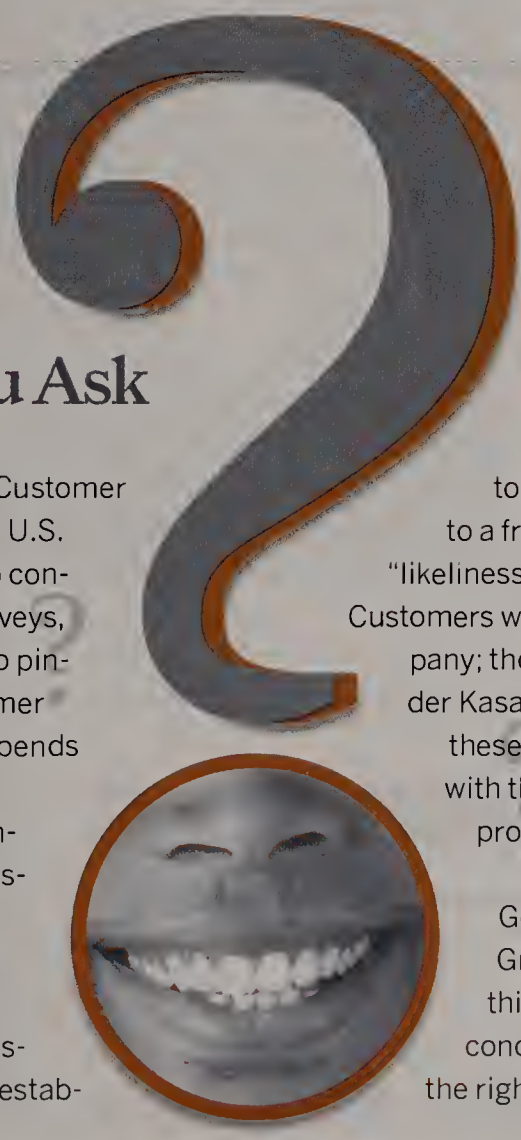
What Zecha didn't yet know was that bombs had exploded in three subway trains and on a double-decker bus a few minutes earlier, killing more than 50 and injuring several hundred.

On the street, Zecha turned to his BlackBerry to search for news on websites for the Underground system and the BBC, but these sites were not yet carrying up-to-date information about the attacks. Meanwhile, as Zecha made his way, by bus and by foot, to his office in southwest London, rumors were flying about bombs and terrorism.

But thanks to wireless devices, detailed news about the bombings soon filtered to Zecha and others in the street. "Overall I think that this helped to keep people calmer," Zecha says. Zecha used his BlackBerry to e-mail the office, where colleagues were monitoring the

Continued on Page 18

Do Customers Like You Depends on How You Ask



CUSTOMER LOYALTY A recent survey by the Customer Respect Group found that only six of the 100 largest U.S. companies deliver an excellent online experience to consumers. One of the goals of this and many other surveys, whether conducted by third parties or in-house, is to pinpoint what creates repeat business. However customer satisfaction is measured, the value of the results depends on asking the right questions.

In this regard, third-party surveys have two advantages over in-house studies, says James Chung, president of the Reach Advisors consultancy. First, they avoid the internal biases that lead many companies to ask about the quality of their customer service, marketing and billing rather than about "how the customer buys." Second, independent researchers can establish industry benchmarks, enabling companies to compare themselves with competitors. Nevertheless, satisfaction isn't the golden metric most businesses assume it is, Chung says: There's a low correlation between satisfaction and purchasing behavior.

Marketing consultant Bruce Kasanoff claims there's only one meaningful question to ask customers: "How likely is it that you will recommend us to a friend or colleague?" The answers, ranked on a 1-to-10 "likeliness scale," are all a company needs to know, he says. Customers who answer 9 or 10 are loyal promoters of your company; those who answer 6 or less are detractors. The remainder Kasanoff terms "passively satisfied." Segmenting all these customers by their business value and following up with them accordingly will help you repair your loyalty problem, he says.

But don't dare rest on your laurels, says Terry Golesworthy, president of the Customer Respect Group. "The surveys that tell you that you are doing things absolutely perfectly are the ones you should be concerned about." They're a sign that you haven't asked the right questions yet.

–Michael Jackman

PHOTO TOP BY GETTY IMAGES

EDITED BY **ALLAN HOLMES**

Rep. Lamar Smith

Patent Law Changes Pending

Companies would have to act quickly to protect inventions

One of the top items on this fall's congressional agenda is the first overhaul since 1952 of the U.S. patent system. And it's possible that the Patent Reform Act of 2005, introduced by Rep. Lamar Smith (R-Texas), will create a new agenda item for CIOs, who could become involved in helping their companies improve their business processes for pursuing patents. In addition, the proposal could accelerate the development of commercial software products.

The bill, which has bipartisan support, would change the basis for awarding patents from the current method—which credits the person or company that can prove they invented something first—to one that credits the person or company who first applies for the patent. Dennis Crouch, patent attorney at McDonnell Boehnen Hulbert & Berghoff, says that such a change would put pressure on companies to improve their internal business processes for preparing inventions to be patented. Otherwise, they may lose their intellectual property to a company that acts faster and files first.

Other parts of the bill would change the way patent disputes are handled, in order to decrease the hurdles that companies face bringing inventions to market. Instead of companies being able to sue each other for patent infringement at any time (as the current system permits), Smith's bill would establish a definite period when a newly issued patent can be challenged out of court. When patent disputes do end up in court, another provision would prohibit the use of injunctions as a way to stop the sale of the disputed product while the case is pending. James Morris, a lawyer and shareholder with Wolf Greenfield & Sacks, says the proposal could benefit companies that want to begin producing a product without having to fear that a lawsuit will force them to stop. Pharmaceutical companies object to those portions of the bill that would weaken their ability to obtain injunctions, he adds.

Morris says the bill favors big software companies, which have the financial resources to file patent applications quickly. And it might hurt small software vendors and individual inventors who depend on injunctions to force bigger companies to settle in patent disputes. That may be why the Business Software Alliance (BSA), whose members include Microsoft and IBM, is fighting hard for the bill. BSA President and CEO Robert Holleyman says the bill is "of critical importance to the technology industry." *–Ben Worthen*

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CIO.com

Mobile IT

Continued from Page 17

news. He was also able to e-mail his family that he was unharmed. (Find Zecha's complete account online at *www.cio.com/081505*.)

People's reliance on wireless technology to communicate with loved ones was the reason London police decided not to shut down the city's mobile networks after the blasts, according to Metropolitan Police Commissioner Sir Ian Blair. Investigators of the Madrid train bombings last year have said that cell phones were used to trigger those bombs, but authorities in London decided the networks did not pose a threat.

Like Zecha, many turned to text messaging and e-mail to share news of the disaster. The volume of e-mail traffic in Europe doubled in the hours after the blast, according to security company MessageLabs.

Digital cameras and cell phones provided a way to share pictures and video as the events unfolded. Television news channels ran grainy video footage taken by a cell phone as injured passengers filed out of a tunnel near King's Cross Station. Mobile phone use reportedly surged again July 21, following four minor explosions across London's transit system.

Zecha says that once he got to the office, his day passed normally, "other than the constant news updates." The office closed early, and Zecha and five colleagues who lived in the same direction walked home together. The streets were filled with people, also walking. It took Zecha one and a half hours to make his four-mile trip, past stores that had closed. "In one case we were told that a supermarket had to close early because their second shift couldn't get to the store," he says. *–Elana Varon and James Niccolai*

Alden Zecha used his BlackBerry to stay in touch during the London blasts.

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MoMA's Bold

CIOBOLD100 As part of the three-year renovation and expansion of the New York Museum of Modern Art's mid-20th century building, CIO Steve Peltzman oversaw the design and implementation of the museum's new IT infrastructure. A sculptor and former U.S. Air Force officer who developed and assessed stealth technology and tactics for the B-2 bomber, Peltzman was vigilant about keeping IT very much behind the scenes so that it wouldn't detract from the art. The result: New technology helps the museum run more smoothly and provides a richer experience for museum and website visitors. This exercise in undercover boldness earned the Museum of Modern Art a 2005 CIO 100 award. Here's a snapshot of IT in (covert) action at MoMA. *–Alice Dragoon*

INVISIBLE NETWORKS
Some 75 wireless nodes are installed on ceilings throughout the galleries. As museum staff install artwork, they can wirelessly access the museum's collections management system to log installation details as they go.

VIRTUAL ART
The Red Studio by Henri Matisse is one of more than 20,000 images of MoMA artwork that visitors to MoMA's website, *www.moma.org*, can view online. MoMA is putting a digitized version of most of its artwork into a centralized database which will be used for the online collection, publications and collections management.

LOOK, MA, NO OUTLETS!
To keep visitors' eyes on the artwork, the building was designed with "architectural cleanliness" in mind, says Peltzman. Power is supplied from ceiling panels or through the bottom of some movable gallery walls.

TOURS TO GO
Visitors can download free audio guide presentations from the museum's website to their own MP3 players.

INSTANT MEMBERSHIP
Membership cards printed in the lobby can be used immediately. The bar code holds information about members' guest and discount privileges at the MoMA store.

PHOTO BY PETER MURPHY

What's BOLD in...

Consumer Products

REVAMPING SUPPLY CHAINS The boldest companies are using point-of-sale data to predict demand for products and then sharing that data with suppliers and customers.

RFID It's still a work in progress, but the boldest are using RFID technology to achieve greater clarity about their inventory.

M&As Note Procter & Gamble's takeover of Gillette. Expect the bold companies to keep acquiring.

–Susannah Patton

Automobiles

TEAM OUTSOURCING General Motors is forcing vendors to compete for small slices of the GM pie and then partner with rivals on the same projects. In this way, none of the vendors can hold GM over a barrel.

GREEN PRODUCTS Honda and Toyota have shown that alternative-fuel cars are possible to produce economically. Making hybrid cars in sufficient volume to keep the price reasonable required major changes in how the Japanese companies make cars.

–Edward Prewitt

To find out what's bold in retail, transportation, health care, government, finance and manufacturing, turn to Pages 48, 56, 64, 68, 76 and 90.

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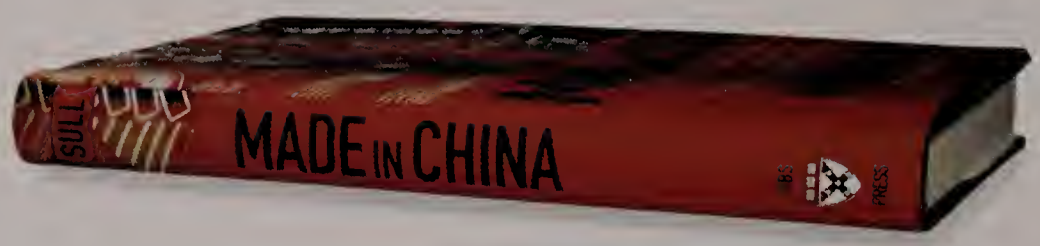


Made in China: What Western Managers Can Learn from Trailblazing Chinese Entrepreneurs
By Donald N. Sull with Yong Wang
Harvard Business School Press, 2005, $35.00

How to Succeed in an Uncertain World

From China, lessons in preparing for the opportunities (and risks) you don't know are out there

BOOK REVIEW CIOs who are loath to do too much long-term thinking will find a lot to like in *Made in China: What Western Managers Can Learn from Trailblazing Chinese Entrepreneurs* by Donald N. Sull. In his examination of leading entrepreneurs in China, Sull posits that in truly unpredictable markets, a long-term vision is pointless at best and perilous at worst.

On the surface, the book is a collection of case studies that uncover many of the idiosyncrasies an executive faces in the Chinese market (murky ownership structures, inconsistent access to capital, shifting industrial policy). But CIOs, who also seek to survive amid uncertainty, could glean potentially valuable best practices as well.

The impetus for the book is straightforward. American companies such as Wal-Mart, and U.S. entrepreneurs such as Bill Gates have been examined and emulated for years. But there's precious little written about the corporate pioneers operating in the world's second largest economy.

So Sull, an associate professor of management practice at London Business School, sought to identify the business leaders of China today. He settled on four industries—IT, telecom, appliances, and food and beverage—that he thought were the most integrated into global markets, and then identified two leading companies in each that had thrived during the economic, political and regulatory turbulence of the past decade.

Through in-depth interviews and access to corporate archives, Sull has created an outline of China's current winners' successful strategies and introduces some fascinating new business and management concepts that work for Chinese executives. An example is "active waiting"—anticipating and preparing for opportunities and threats one can neither fully foresee nor control. During periods of relative calm, successful managers in China focus on midterm priorities that provide their companies direction over periods of one to three years, such as building reserves of cash and resources, improving operations and managing risk.

As a primer for dominating the Chinese market in the long run, it's not clear how helpful this book will be. But it can be a valuable playbook for flourishing in an environment of insecurity and ambiguity—a state in which many companies operate these days, no matter where they are in the world.

–Stephanie Overby

United States, Europe Pledge Talks to Reduce Conflicting IT Regs

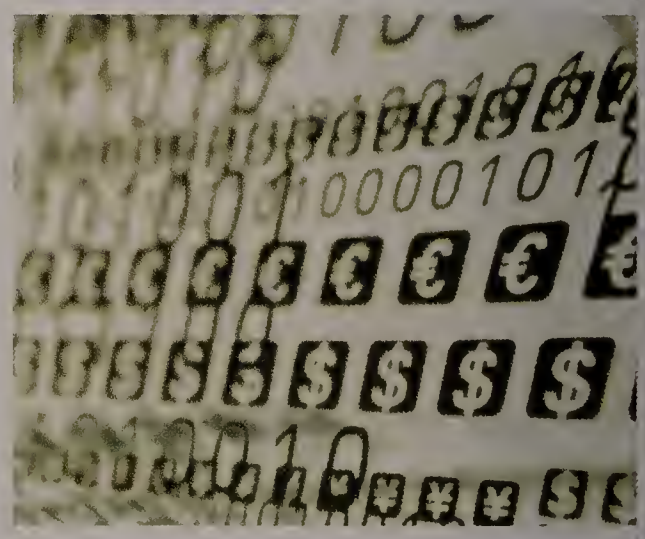
TRADE President Bush and his European Union counterparts have pledged to work together to reduce conflicting technology regulations, following a summit meeting in June.

The group committed to establish a high-level Regulatory Cooperation Forum, and encouraged lawmakers in the United States and European Union to work closely on regulatory issues.

At a Senate hearing in May, executives from high-tech companies complained that conflicting E.U. and U.S. regulations governing the manufacture and sale of IT products are increasing the cost of these products and threatening U.S. and European technology leadership.

The United States and European Union are arguing about who should control the Internet (some people in the European Union favor an international governing body) and about standards that make hardware and software usable for people with disabilities. Conversely, countries such as China and India are focusing on the big picture by making investments to expand their high-tech sector, says Harris Miller, president of the Information Technology Association of America, a trade group.

High-tech executives bemoan what they see as onerous European regulations. Thomas Patton, vice president of government relations with Philips Electronics North America (a maker of MP3 players), decried a European practice of taxing devices that can be used to copy music, movies or written products, saying the levies drive up vendor and customer costs. The levies are meant to allow copyright holders to get paid.



Meanwhile, Joseph Duffy, vice president with SAP Public Services, wants Congress to work with E.U. regulators on a global standard governing technology-product accessibility for people with disabilities. If there are multiple standards, Duffy says, IT developers will either forgo certain markets or incur costs and delays to implement multiple, possibly conflicting, standards.

–Grant Gross

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Reiner Schmitt, IT Manager
SAP AG

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by the numbers

BY **LORRAINE COSGROVE WARE**

People Watching

Employee e-mail and Web use monitoring is a common practice to protect against misbehavior

More than three-quarters of respondents to a recent survey by *CSO* (a sister publication to *CIO*) said their companies permit monitoring employees' Web use, while 61 percent said their companies allow e-mail content monitoring.

Chris Christiansen, vice president of IDC's security products and services program (IDC is a sister company to *CIO*'s publisher), says that originally, companies monitored Web activity and e-mail to avoid harassment suits that resulted from employee misbehavior, such as sending threatening or suggestive e-mails, accessing and distributing inappropriate information, or abusing coworkers' e-mail privileges.

But now, Christiansen says, regulatory compliance and protection of confidential information are the motivating forces.

Also, inappropriate use of the Internet can soak up the company's bandwidth, slowing or crippling communications, says Christiansen. And a leak of negative financial information prior to a company issuing its earnings reports can send stock prices plummeting.

Monitoring and even blocking prohibited content and company confidential information can minimize and prevent these problems. Additionally, monitoring provides a log of employee behavior that can serve as evidence if the company has to defend itself in court or provide grounds for firing an employee.

While monitoring e-mail and Internet use comes with costs to buy monitoring software and to administer and review logs, Christiansen believes it's worth the investment. The additional expenses outweigh the risks of failing an external audit, releasing confidential information or facing litigation.

Best Practices

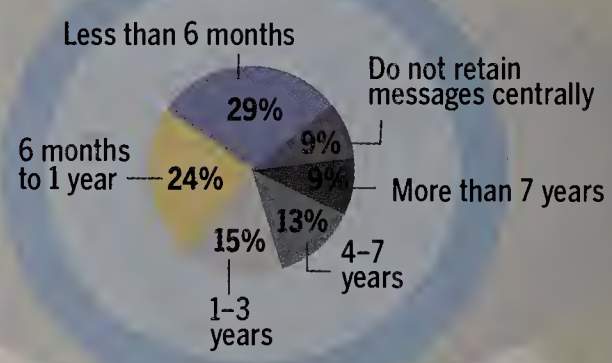
1. Review your existing employee monitoring policies. Understand how your company's policies for monitoring workers' computer use are being enforced, and how often they receive information and training. Ensure that employee handbooks and manuals are up-to-date. Compare your company with peer companies and strengthen your policies if necessary.

2. Select appropriate technology. Determine the level and type of monitoring you need before you decide which IT products to buy. You'll need different tools depending on whether you're monitoring all employees or just select departments, and whether you're monitoring their activity or blocking incoming or outgoing information.

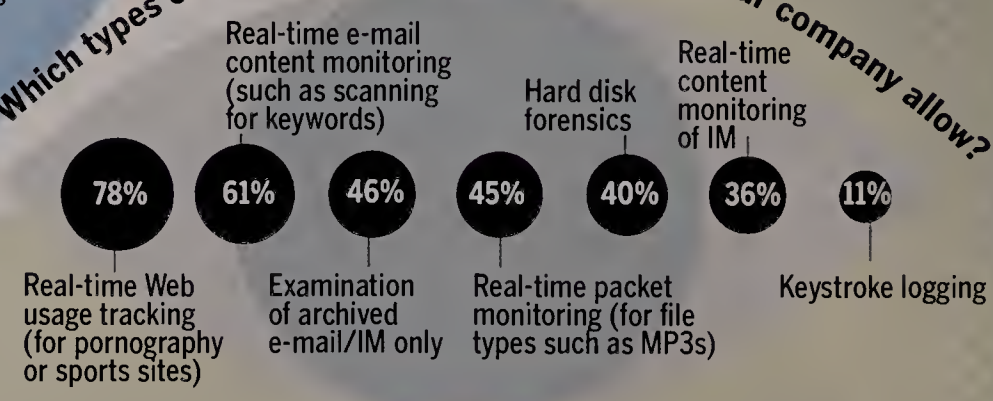
3. Keep employees in the loop. Inform employees that they are being monitored. Make sure your communication covers the following points: explains what monitoring entails; defines violations of Web, e-mail and IM policies; outlines how employees will be notified of policy violations; and defines the consequences of specific violations. Then remind employees frequently that they are being monitored. "Surprisingly few employees are aware they're being watched," says IDC's Chris Christiansen. If employees are aware, they will be more conscious of their Web and e-mail behavior.

SOURCE: "Surveillance and Monitoring Survey," May 2005. Based on 166 responses.

How long do you retain central archives of e-mail messages?



Which types of employee data monitoring does your company allow?

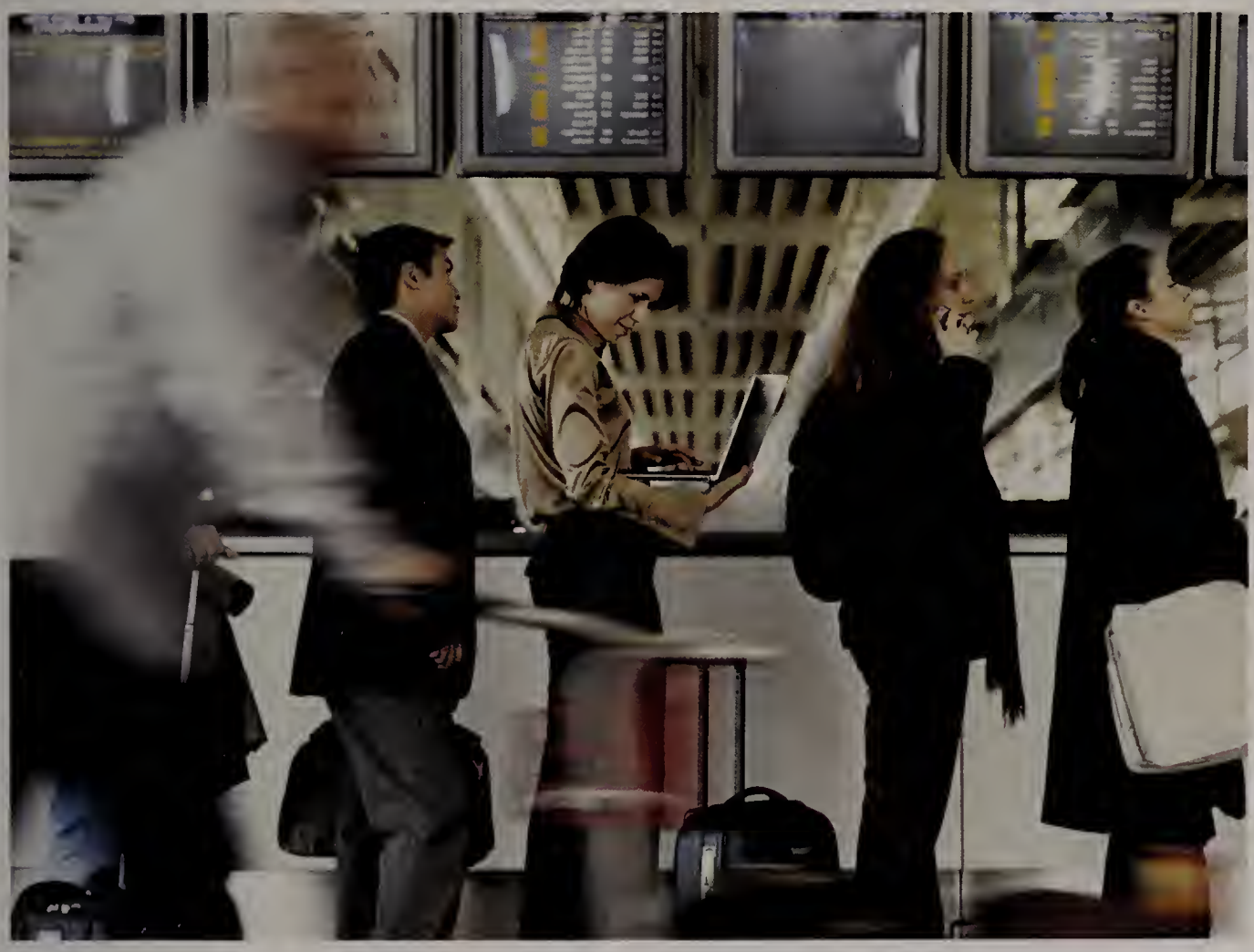


EXTENDING MOBILITY BEYOND wireless email and messaging brings a tremendous new opportunity to enhance core business processes; but it also means undertaking an IT initiative with many moving parts.

Sales executives can sell smarter by accessing real-time data, field workers are more productive, asset utilization grows, and customers are happier with real-time access to mission-critical information. Mobility is a key tool to help companies increase operational efficiency while cutting down on paper-based systems.

With such a compelling mandate, there's no question that business and IT leaders need to take mobility seriously and manage it as a focused initiative, rather than letting mobile applications grow piecemeal and chaotically. In doing so, executives can prove the business value while managing the cost of implementation and support for a compelling total ROI. By using a structured, thoughtful approach, implementation is easier than many leaders may think.

The question is: How do you envision, design and deploy a successful mobile strategy? It's a different beast than a regular IT initiative, but by following these steps and being mindful of the differences, you can and will succeed.



How to Get Started with Enterprise Mobility Strategies

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Take Your Business to the Edge—Today

❶ Create a Compelling Business Case for Mobile Solutions

It's clichéd, but true: You don't need to re-invent the wheel. Mobilized applications are expanding across many industries, and the early adopters can offer their own lessons learned as guidance.

"It's always best to build on what's been done before, so take some time to identify the value drivers within your individual business, and use that information to research best practices from wireless early adopters with similar processes and applications," says Todd Allen, Director of Enterprise Architecture and Innovation at Cingular's Business Markets Group.

Companies should then turn to their own business processes to evaluate how to create business value through mobilization. Look for business processes you can streamline by:

- Eliminating redundant process steps with faster information availability;
- Turning downtime into productive time
- Eliminating errors and data inaccuracies to improve customer service
- Reducing re-work caused by a lack of real-time information in the field
- Increasing asset utilization with more intelligent scheduling and dispatching

IT executives can leverage ready-made services that feature common processes within many industries that can benefit the most from real-time data. They can also use business process simulation software to accurately predict the impact of mobilization on each business process.

From this analysis should come a short list of business processes that would most benefit from mobilization, and these are ripe for a proof-of-concept or pilot program.

"We recommend that companies prioritize their candidate processes by putting them through a pilot before a full deployment," says Jian Wu, senior solutions architect with Intel's Solutions Services organization. "By identifying how this particular business benefits from process improvements during the pilot, we can justify the project with tangible, measurable ROI."

For example, if a pilot of a field service application allows a service representative to add two extra service calls daily through the use of mobilized solutions, that change can be quantified in terms of its value to the business.

Piloting also allows companies to get a good idea of the value of a project before investing a large chunk of change. "When things are small, they are easier to change," points out Wu. "Pilots allow companies to assess their resources and the business value of a project in a fairly risk-free fashion." Successful pilots also act as goodwill ambassadors, garnering user buy-in by demonstrating the real value of mobility.

At this point, leaders should evaluate the project in terms of budget and available resources to move seamlessly from a successful pilot to a full deployment. "Use your pilot project to test a balanced set of business, technical and operational metrics," says Cingular's Allen. "Business criteria of pilot success are the most important—a clear set of objectives and milestones, followed by your ability to scale end-user support.

❷ Extend Your IT Infrastructure Wirelessly

Once you have determined the best areas for mobile implementation, you need to design a mobile architecture that is tailored to your business needs by doing the following:

→ Map to business processes and existing IT infrastructure.

Make sure the proposed architecture aligns with business requirements, which entails ongoing discussions with the business process owners. "IT executives must not only map the proposed architecture to what the business wants, but they also need to map it against the current IT infrastructure to leverage existing components," says Wu. "It's more beneficial to use existing components from a cost and ongoing-maintenance standpoint."

One method of doing so is to take advantage of existing frameworks from vendors such as Cingular, Intel and Sybase. These frameworks feature hardware and software components that have proven to work well together from both a technical and a business process standpoint. Reference architectures can offer valuable insights from each company's deep well of mobile expertise.

CIOs must also plan how to ensure data

security when extending business applications into the mobile arena, and this, too, depends on the existing infrastructure. For example, do you choose to use security features from the existing application layer, from mobile middleware, or from an end-to-end security product? The choice depends on what's already in use, as well as what best fits the business process being targeted for mobile transformation.

Another important consideration is how to integrate mobile applications into the current system and business processes. "Mobile applications should not exist in a vacuum," says Sheila Wood, Solutions Architect with Sybase's WorldWide Solutions organization. "Companies should map data movement within an architecture so that they know where a mobile application pulls data from, and when it does so." In doing so, CIOs can pinpoint where they may need technology to help integrate and synchronize applications.

Another area of discussion centers on whether the company is best served by using a unified mobile architecture or whether point solutions work better. The unified, or common architecture, plan generally involves more upfront cost and integration work during the initial application rollout, but requires far less maintenance and is easily expandable for future applications. Point solutions, on the other hand, are fairly quick and easy to develop, but can present thorny integration and maintenance issues over the long term.

→ Set and reinforce clear expectations.

Mobile applications stand the greatest chance of success when users and business leaders are involved from the get-go on issues of design, performance, usability, support and cost. Sit down and hammer out a structured approach that everybody buys in to, and make sure that people stick to the agreement. Furthermore, companies should continually circle back to make sure that everybody understands the processes or steps that the application will improve or eliminate through mobilization.

"Particularly with mobile applications, it's vital to involve users to ensure that the application is comfortable to use," says Cingular's Allen "It doesn't matter how much ROI an application could generate if users hate it and won't use it."

→ Tailor your approach by type of application and device.

Mobile applications must take into consideration the field conditions in which they will be used—again, extensive conversations with the business stakeholders are necessary. First up is what type of device should be used, a decision that's driven by both external environment and the type of data to be accessed.

For example, a repair technician in an oil

refinery might need to access large electronic drawings of the equipment he's repairing. A PDA will not be big enough to display the drawings; moreover, a rough environment calls for a rugged device of some sort.

Another question is the form factor. Some mobile workers will need keyboards for extensive data input, while others will do better working with a stylus and pull-down menus. "Selecting the right device for each type of worker and each type of work is key to success," says Wu.

This also drives how the application is built. If users are accessing via laptop, the application will require fewer modifications than if it's going to be mobilized for a handheld device with a smaller screen.

Moreover, companies need to consider what else needs to be modified in order for the mobile application to work seamlessly with existing business processes. If a sales force executive is working with data pulled

from CRM software, a synchronization component may be necessary to keep the data accurate on both ends when needed—and designers must also consider how often it should be updated. "Not every back-end application can provide data that's up to the minute," says Wood. "It makes sense to go to the business folks and discuss how often the data needs to be synchronized."

→ Optimize design for wide area wireless networks.

Deploying applications on wireless wide area networks (WWAN), such as Cingular's nationwide EDGE network, maximizes the benefits of real-time data by providing ubiquitous, always-on access to information at speeds approaching broadband. "To maximize your investment, design your application to take advantage of wireless networks that provide consistent high-speed speed nationwide," says Cingular's Allen.

Using WWAN also means that mobile applications must work within some constraints inherent to mobility. Wireless networks tend to have longer delays than wireline networks, so it makes sense to build an application that optimizes back-and-forth traffic as it conducts transactions.

"Companies should think of mobilized solutions and software in terms of being 'offline enabled'—they need to allow for synchronization when the application is optimal for such," says Allen.

To further optimize the user experience, applications should be able to account for some degree of coverage variability. Using third-party software that manages wireless sessions when coverage fades, and implementing store-and-forward capabilities are prime examples of optimizing applications for wide-area wireless networks. When applications can function out of coverage, mobile workers can experience enhanced productivity regardless of periodic connectivity.

❸ Manage Your Mobile Deployment

Equally vital to how the application is designed is how it's deployed. Involve users in requirements definition and application design to build vital support for your deployment. Provide training to ensure that users are comfortable with all aspects of the new application and enhanced business process. This will ensure a successful launch and ease ongoing maintenance and support.

Getting an application designed and deployed fast is key to garnering the anticipated ROI, and that means that stringent project management processes must be deployed.

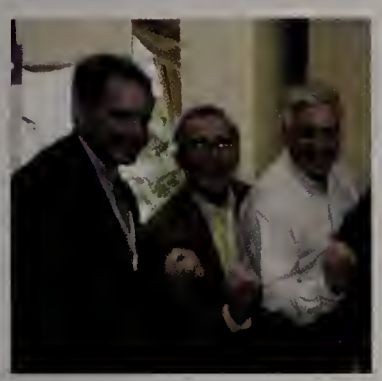
After all, more often than not it's not the technology that fails, it's the communication process. Tapping into the service capabilities of companies such as Cingular, Intel and Sybase means that business-IT leaders have access to a deep knowledge base from many previous engagements. "With every customer project, we learn more and map it into a knowledge base that we share with mobile consultants and implementers," says Ana Ammann, Principal Business Consultant with Sybase's WorldWide Solutions organization. "We've lived the real-world scenario."

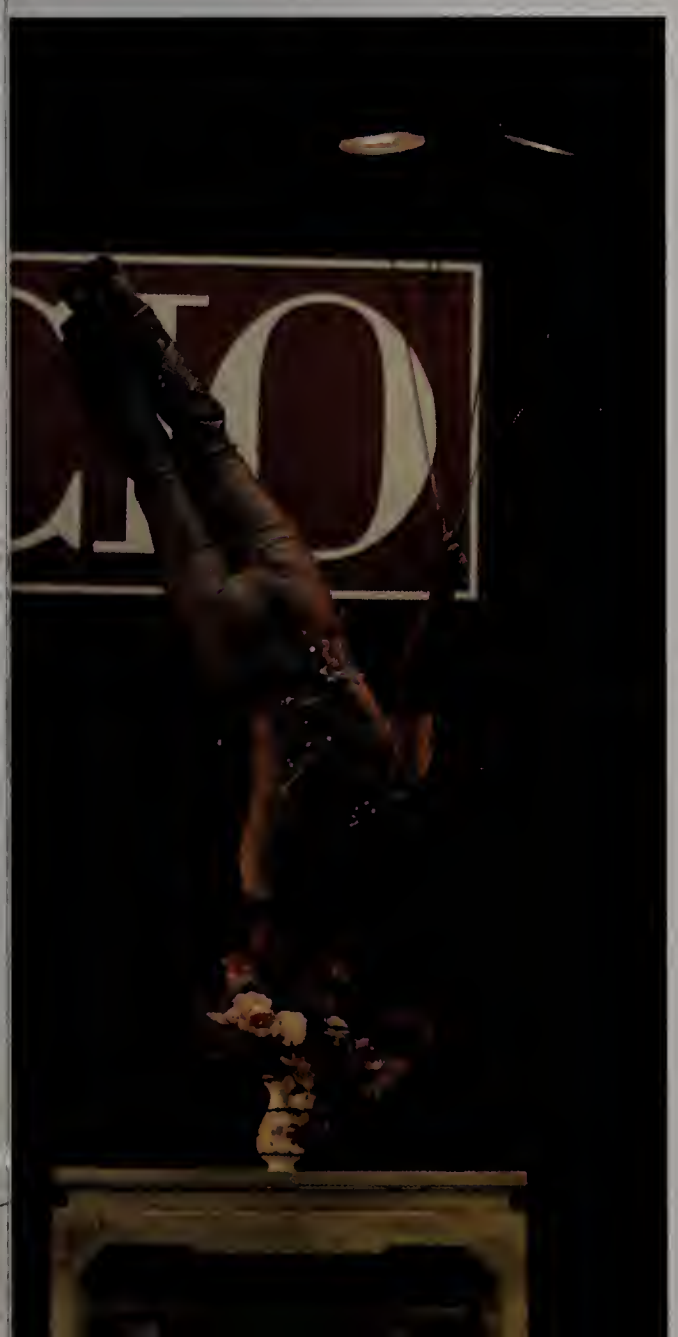
It's vital to optimize the user experience; experts unanimously point to extensive usability testing in both pilot and production mode as a key success factor. In addition to the usability best practices that can apply to any system implementation—for example, streamlining the workflow and simplifying data entry—mobile experience can be enhanced with progress indicators and estimated completion times for lengthy operations by implementing session management and persistence middleware solutions, and by designing the applications that use bandwidth efficiently to minimize system response time.

A thoughtful approach to implementing mobility as a company-wide strategy will produce applications that users like and want to use—and that bring necessary and vital business knowledge out to where it's most needed. By doing so, mobility can translate directly into ROI for the business. ■

Webcast: How to Get Started with Enterprise Mobility Strategies

To learn more about enterprise mobility strategies and what you can do today to get started, tune in to an exclusive, on-demand webcast at **http://domains.cio.com/infoedge3**. Gain new insights from Cingular's Todd Allen, Intel's Karl Holder, and Sybase's Sheila Wood. And take advantage of the interactive webcast and ask your own questions of these enterprise mobility experts.





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Michael Schrage

IT'S ALL ABOUT THE EXECUTION

Feedback Worth $50 Million

If you don't make it easy for your customers to offer ideas about how your company can improve its services, they may just give those ideas to your competitors

The column you are about to read is true. It was inspired—provoked, actually—by my online interactions with a brand-conscious global financial services giant whose charge card I carry in my wallet. The name of this company is not important: I would prefer that readers focus on the point I'm trying to make rather than on the company I'm using to make it.

So, here I am on American Express's website, banging away on my laptop, doing the thing I most despise doing as a consultant: expenses. I hate—no, loathe—expense reports. Even though expense reports are the most remunerative writing I do, they're a pain, and keeping and tracking paper receipts is a nuisance. I remain desperately eager for easy and frictionless ways to get swiftly reimbursed for the hotels, taxis and other financial effluvia of my nomadic existence.

As I try in vain to define and cut and paste my airfare from a particular date (and my hotel receipt and taxi rides from the same date) from my online account into a Word document that will soon double as a digital expense form, it hits me: There's a better, smarter and easier way of doing this. Much better. Much smarter. Much easier. I feel the happy tingle of hair rising on the back of my neck that physiologically signals: good idea!

As a fast-calculating idiot savant with an entrepreneurial bent, I do a quick back-of-the-mental-envelope number-crunch and figure that this is, conservatively, a $50 million-a-year idea for my charge card company. That's real money.

But because I'm the kind of guy who will cheerfully give away a $50 million idea if it will make my life easier, I immediately stop doing my expenses online and draft a 650-word e-mail telling Amex how it could design, prototype, test and deploy this scheme.

ILLUSTRATION BY JO TYLER

"Guardian uses Primavera to run IT like a business."

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In a moment, I'll explain the idea and justify its multimillion-dollar valuation. But the real reason I'm writing this column is not to tout my idea's brilliance but to declare my frustration. My charge card company—and I've been a member in excellent standing for over 15 years—simply would not let me submit my memo either online or via the phone.

You want to talk CRM? You want to talk about sustainable sources of strategic advantage? Let me emphatically state: If you don't have infrastructures or apps that make it easy for your best and most profitable customers to give you—*give* you—ideas about how you can do better and be better, you need to rethink what digital networks can and should mean in your organization.

Any company that sells products or services online needs to provide the means to encourage customers not just to whine and complain but also to suggest and enhance. That's not hard technically. Alas, what's technically easy all too often means nothing to the cultural, organizational and managerial resistance that defies cost-effective implementation. If you want smart feedback, you have to design for it. Even a little respect goes a long way.

Ideas for Free

Unfortunately my charge card company's feedback button linked to an annoying questionnaire and no conceivable way to send any kind of meaningful e-mail or memo. Thus began my quixotic effort to give away a $50 million idea.

First I picked up the phone and called customer service. I politely explained that I had an interesting—and potentially important—idea for the company's website that could be worth tens of millions of dollars. I asked how I could send my e-mail.

The equally polite customer service rep (everyone was polite and professional) explained that there was no customer service e-mailbox where it could be sent. She transferred me to the interactive services group. The lady there first referred me to the site's feedback button but agreed its interface was inadequate for my kind of feedback. I asked for an alternate e-mail address. She said she didn't have one to give.

I explained (politely) that I wrote a column for *CIO*, worked at MIT and was someone who paid my (rather large) charge card bills on time. Surely someone in her group would be interested in this idea. Moreover, I was a valued customer. Didn't she have some sort of e-mailbox for valued customers? The answer was a very polite but very firm "no."

Back to the main customer service line. Same results. No way to send an e-mail. I asked to speak to a supervisor. The supervisor says, "No e-mail." I ask how customers can make suggestions for improved service. She offers a snail-mail address.

Back to interactive services. I ask to speak to a supervisor there. A gentleman explains there is no enterprise mailbox address for online customers either—but maybe he could get authorization to give out his e-mail address or a colleague's. Long delay. Long delay. Long delay. I feel myself slowly changing from Don Quixote into Captain Ahab. He finally returns. He has an e-mail address for another supervisor. We double-check to make sure it's accurate.

Any company that offers services online should provide a way for customers to suggest improvements.

I immediately send my memo. It gets bounced. I wait 24 hours. I try again. Nada. Nothing. Bubkes. When you've got a lemon, make lemonade. I decide to salvage my wasted time by writing this column.

But what's the big idea? Could it really be worth $50 million a year? You be the judge: My charge card company should offer an online expense report form that allows individuals like me to drag and drop individual expense items into a coherent, time-stamped and authenticated document that can be securely e-mailed to one's clients. The digital document would look and feel professional; you could send it either from your own address or from the card company's site. You could store the forms on your own machine or with the company or both.

Privacy concerns? Security? Come on! Do you really care who gets access to your expenses? Only a celebrity or a CEO who flies around in a Gulfstream V needs be wary of this service. After all, the charge card number can be appropriately masked.

Yes, I know about Quicken and other expense management software. But frankly, it would be faster, easier and simpler if I could just do everything online. Would I pay $29.95 a year to be able to prepare and send expenses this way? Cheerfully! Would I spend $50 a year to prepare, send *and* back up my expenses this way? You bet!

Do the math. How many sole proprietors, freelance consultants and individuals—inside companies and out—are targets for this kind of service? My bet is, easily 1.5 million to 2.5 million cardholders and small businesses. A simple query to online users would help gauge global interest.

The bottom line? I can't give Amex a $50 million idea for free. Whether you like my idea or not is beside the point. The point is, your customers can and should be a dynamic source of ongoing innovation and inspiration for your organization. If you don't have a virtual suggestion box for them, you should. If you don't, don't be surprised when your smartest customers give their best ideas to your fiercest competitors. CIO

Michael Schrage is codirector of the MIT Media Lab's eMarkets Initiative. He welcomes your suggestions via e-mail at *schrage@media.mit.edu*.

PHOTO BY JOHN SOARES

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How to Cooperate with the Competition

Five steps to successful collaboration with your biggest rival

We CIOs are loyal to our companies. But when we attend conferences, we find ourselves face to face with IT executives from the competition. Then, a funny thing happens—we discover we share a common language and common challenges. This leads to the question of whether we could cooperate on some things even as we compete on others.

There's a term for this kind of cooperation: "co-opetition." Coined in 1996 by Adam Brandenburger from Harvard Business School and Barry Nalebuff from Yale School of Management, it's the idea that businesses can benefit from the judicious mixture of competition and cooperation. There were many such ventures formed during the dotcom bubble, but few of them worked out. Once you decide to trust someone you were ready to destroy in the marketplace, it takes committed leadership to make that collaboration successful.

The music industry is notorious for its egos and its inability to cooperate. So when my IT department and I decided to preach cooperation—in the form of a shared royalty administration system—among the companies that record and publish music, we took a risk of being handed our heads.

Royalties are the payments we make to our artists. We sell music, collect the proceeds and disburse them to the artists. However, life is not that simple; each contract is unique. So although we could have developed a new royalty system to support these contracts, several factors led us to co-opetition.

First was the cost. Developing the system ourselves would have meant a massive investment at a time when the industry is contracting. Next came the need for standards. Music companies cross-license their products, and it would be easier to exchange

ILLUSTRATION BY ALEX NABAUM

We needed to ensure that whatever we did would not conflict with antitrust laws.

information if we all followed a single application program interface. Finally, co-opetition presented a new revenue opportunity. We could set up an independent joint venture that would sell access to the system to other companies in the industry—kind of like what ADP does for payroll.

Now came the hard part: convincing my CEO. In the process, we distilled five steps to collaboration in which consistent, determined CIO leadership is critical.

STEP 1: Call the Lawyers

We needed to ensure that whatever we did would not conflict with antitrust laws, so my first step was to meet with our general counsel. I acknowledged that I was aware of antitrust laws and had no intention of breaching them. I promised to share the minutes of all meetings with the CIOs from the other companies I planned to work with.

This was not enough. Our lawyer had me and my team role play meetings with potential partners until we were comfortable that we could discuss the legal ramifications of our idea. Getting the legal team involved early also ensured their participation when it came time to negotiate with our partners.

STEP 2: Find the Right Partner

Now that the legal coast was clear, I went out to find a coconspirator. I looked for a CIO with similar needs—and, more important, with the right attitude. The key to success in this step was to collect our ideas into a short and precise discussion note to use in our pitch. We had to make sure that our basic assumption—that the problem is universal—was valid and that our solution would be attractive to another company. We got lucky. Our counterparts at our largest competitor, Universal Music Group, were as determined to do this as we were. Joe DeTullio, Universal's CIO, and Marjorie Feldman, the company's royalty executive, became our best friends and allies as we convinced our companies to join together.

STEP 3: Build a Business Case

We built the case gradually, starting with the current cost of operations versus the planned cost post-implementation. We went on to show the cost of alternatives, with "do nothing" always a viable alternative. Since the business process for managing royalties under the proposed joint venture was similar to what we were doing in-house,

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David Deveau

Unified Boss Theory

Expanding the scope of its IT leader allowed the Nova Scotia Department of Justice to deal with IT solutions *and* privacy issues, all under the same roof

ILLUSTRATION BY JIM COHEN

In 2000, a major database system intended to track individuals through the provincial justice system was developed for the Nova Scotia Department of Justice. Although considered a best-in-class application, the system was built without adequate mechanisms to audit user access and without adequate agreements in place to hold users legally accountable for misuse.

How did this happen? The answer is as old as IT: The right hand didn't know what the left was doing.

There had to be a better way to align privacy and other perspectives with information technology. There was.

The Nova Scotia Department of Justice is responsible for the administration of provincial courts and correctional institutions. It also provides legal services to the provincial government and administers many justice-related programs. In 2002, Deputy Minister of Justice Douglas J. Keefe consolidated all of the department's key information functions—information technology, privacy and access, policy planning and research, records management, and library services—under one person: the executive director of information management (EDIM). This organizational change signaled a new and progressive approach to leadership.

As the current EDIM, I am accountable for addressing the business needs of this diverse and decentralized organization through IT, and for guiding how the Justice Department deals with nontechnology aspects of information. The EDIM concept can be thought of as the natural evolution of the CIO role in that it champions a holistic approach to information management, including but not limited to IT. The new structure was created because the deputy minister recognized that information management functions are interdependent and need to

be managed as a unit to better support one another. He felt that this required a single executive who could create one vision and apply it consistently across these functions.

I joined the Justice Department about a year after this umbrella position was formed. The outgoing EDIM had begun building awareness of the new structure, but the task of implementing change remained for the "new guy" to tackle. The journey hasn't been easy and is far from complete. Functions such as IT or records management have worked hard over many years to build a professional identity, and understandably, those groups resist anything that risks a loss of that hard-won identity. No one wants to see their place in the organization watered down, even if in perception only.

At Justice, we've addressed this by emphasizing that information management is an umbrella concept, not a replacement identity. I've invested a lot of time in meeting one-on-one with senior information management leaders to explain that the mandate of the EDIM is broad strategy, not operations management. The Justice Department is fortunate to have experienced and competent leaders running our branches, and I've made it clear to the rest of the organization that information management directors are still responsible for "running the show." At times, this has meant that people making end runs to the EDIM had to be clearly referred to appropriate directors. Otherwise, the relevance of IT staff would be eroded. Besides, considering my focus on more strategic duties, I could not possibly do the IT project process "justice." (I had to get that pun in at least once.) I reserve most of my time for strategic planning, championing new approaches to business and improving alignment of information management and the business. I also market information management across the enterprise and build relationships with my executive colleagues.

In our new structure, information management leaders are expected to consider issues outside their traditional purview. Initially, it was awkward working together on things such as business plans because information management executives did not see the value of doing the exercise together. So we created opportunities for face time—such as senior staff meetings, an all-division retreat and cross-functional committees. The result: Staff within information management branches engage in activities that take them into the world of their division colleagues. It is now far more common in staff meetings to observe these leaders making suggestions about one another's activities.

Even this early in our organizational change, there have been obvious benefits to consolidation. They include increased cooperation between information management functions, better IT-business alignment and a move to common IT solutions. Before this consolidation, determining which projects went

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ahead often depended more on who managed to set aside enough budget than what was actually most important for the justice system. A departmentwide IT steering committee has now been put in place, chaired by the EDIM, with a mandate to collaborate on projects and to discuss whether IT projects being proposed really reflect the priorities of the entire organization. The EDIM considers committee feedback and makes recommendations to the executive committee. Recently, this approach spurred the repositioning of a training management program, originally envisioned for correctional workers only, into something that will be rolled out as a departmentwide solution to tracking staff training. It is cheaper and easier to invest in one system rather than several.

With this new structure, we can also better implement our philosophy of transparency and accountability. For example, Nova Scotia's Justice Department recently welcomed interest from the legal profession to directly access our integrated information system (to avoid manual requests of physical court files). This kind of collaboration would not have been embraced in the past.

Part of the department's increased focus is on privacy issues. In Nova Scotia, we are bound by disclosure rules that require 30-day responses to public requests for government-held information, much like the Freedom of Information Act in the United States. We have developed strategies (online information and electronic information tools, for example) that enable us to more efficiently handle such requests for information.

As far as the database described in the opening paragraph, we now have an onscreen user agreement in place, an expanded privacy policy, and our IT branch is investigating how it can use existing database tools to provide us with an access audit capability. And we are in the final stages of developing a new privacy impact assessment tool that will be required when developing future information systems.

In sum, we have found that rethinking the role and scope of the "CIO" allows us to address the ever-increasing challenges associated with IT-business solutions, while at the same time dealing with heightened privacy and security concerns. CIOs have already successfully moved beyond technology infrastructure to become champions of business solutions. Now, this critical role needs to evolve so that it can embrace the wider world of information management. CIO

David T. Deveau has been EDIM at the Nova Scotia Department of Justice since 2003. He can be reached at *deveaudt@gov.ns.ca*.

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we added the costs and benefits of outsourcing not just the technology but the entire royalty administration process. The business case was sealed.

We de-emphasized the revenue-generating upside, because it was not guaranteed and this project was not conceived as a moneymaker. To our surprise, our corporate leaders—from the heads of business units to our CEO—got the cost-savings argument immediately and spent most of the time trying to understand the upside opportunities.

STEP 4: Fight FUD

Fear, uncertainty and doubt, also known as FUD, is a common tool of skeptics. With any new initiative, it's easy to start playing a "what if" game, spinning disaster scenarios. I had to make sure we were prepared. I challenged my staff to help me create negative scenarios along with the positive examples of how the system would be used. To encourage debate, I sometimes made an absurd statement and waited for reactions.

This is the time when your staff is critical. You need ideas and someone to challenge your thinking. We didn't have a formal process for such exercises, but whenever anyone threw a challenge on the table, an ad hoc team was assembled to address it. Many times during these exercises we found gaps in our thinking that helped us solidify our case.

STEP 5: Enlist Supporters

Rather then engaging in mass presentations to anyone who might have an opinion, we assembled a core team of "JV Supporters" between the two labels.

Our teams met individually with the key people within our companies, including the CFOs and the heads of each label. This was how we made sure that we dealt with everyone's concerns and that nobody would surprise us with questions out of left field during the formal presentation to our executive leadership.

Good to Go

It took about four months, but we got clearance. The joint venture was established at the end of the third quarter of FY04. We are on schedule, on budget and nearing alpha release of our jointly developed royalty administration system. It's not time to celebrate yet, not until we are in full production next year.

But we've learned that co-opetition is possible, provided you exercise the leadership and persistence necessary to achieve it. CIO

Tsvi Gal is CIO at Warner Music Group. Send feedback about this column to *leadership@cio.com*.

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The Bold Choice

Boldness is the willingness to assume significant risk for the sake of great reward. This year's honorees had the drive to reach for the prize, the guts to embrace the dangers, and the discipline to create a mitigation plan and stick to it. BY DAVID ROSENBAUM

INSIDE THE BOLD 100

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Modern capitalism was born at the beginning of the 17th century in what is now the Netherlands.

In a bold and revolutionary move, the Dutch East India Company (formed in 1602) distributed the risk of sending ships out to buy nutmeg, cinnamon, cloves and other exotic spices in the faraway ports of the Indian Ocean and the South China Sea by selling shares in the company on the Bourse, one of the first iterations of a stock exchange. This was a profound economic transformation from the feudal model, in which ownership and wealth were concentrated in the crown and the gently born. By the 1660s, those shares, purchased by Holland's endlessly energetic burghers, were earning annual dividends of 40 percent to 60 percent. Consequently, the Dutch became the richest people on earth.

And they took that wealth and invested it in...tulips.

THE SHAPES OF BOLDNESS

Our survey of the CIO 100 honorees reveals that boldness springs from a willingness to take smart risks, and success comes from strong leadership

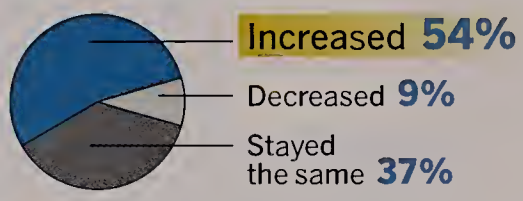
Willing Risk Takers

Bold enterprises aren't afraid to take on risks to gain business advantage, and their willingness to do so is growing.

On a scale from 1 (not willing) to 5 (very willing), rank your company's willingness to assume risk for business advantage.

1. 0% (Not willing)
2. 9%
3. 37%
4. 40%
5. 14% (Very willing)

How has that willingness to assume risk for business advantage changed in the past two years?



Get the Full Results

There's more to **THE BOLD 100 HONOREE SURVEY** online. Find out which technologies (not necessarily bleeding-edge ones) helped take these 100 companies to the top. Find the full survey and findings at **www.cio.com/research**.

CIO.com

The Souls of Bold Machines

Bold applications of IT aren't necessarily bleeding-edge. Topping our honorees' list of critical technologies are the familiar ones for integrating systems, processes and data.

What technologies have been most critical in the success of your latest bold initiatives?

- Integration-enhancing systems and processes 86%
- Data access/warehousing 42%
- Portals 35%
- E-commerce 32%
- Wireless 32%
- Collaborative systems 30%
- Business intelligence software 21%
- Supply chain automating and optimizing 21%
- Knowledge management 20%
- CRM 19%
- Service-oriented architecture 19%
- Software as a service 16%
- Other predictive technologies 14%
- Open source 7%
- GPS 5%
- CAD 4%
- Digital manufacturing 4%
- RFID 4%
- Grid computing 1%
- Other 21%

Note: Respondents checked all that apply.

Choose up to three technologies that you plan to implement or leverage in the coming year to support bold initiatives.

- Integration-enhancing systems and processes 53%
- Data access/warehousing 35%
- Collaborative systems 31%
- Wireless 31%
- Business intelligence software 29%
- Portals 29%
- Knowledge management 26%
- E-commerce 22%
- Service-oriented architecture 21%
- CRM 20%
- Supply chain automating and optimizing 18%
- Open source 12%
- Software as a service 11%
- Grid computing 10%
- RFID 9%
- Other predictive technologies 9%
- GPS 4%
- CAD 2%
- Digital manufacturing 2%

It seemed like a good idea, a bold but reasonable investment strategy. Thanks to its sandy, well-drained soil, Holland was an ideal place to grow tulips. The cost of entry into the market was low, and a single, particularly prized bulb could sell for as much as 2,500 guilders—at the time, the yearly yield of a good-sized farm. But unlike the Dutch East India Company model, the tulip business lacked the sine qua non of any bold endeavor: risk mitigation. Once one's entire wealth had been converted into tulip bulbs or tulip futures (which many did), once one had converted one's entire farm to tulip cultivation (as many, many did), there was no turning back, no exit strategy. And when the bubble burst (the bulbs had, of course, minimal intrinsic value; they were, after all was said and done, just flowers), the country and its people were devastated.

From this sad tale comes a calculation that hundreds of years later is embedded in all the applications we received for this year's 18th annual CIO 100 Awards: To be bold is to assume risk; without risk, there can be no reward. But there's no reward that justifies an endeavor lacking a plan to transfer, diminish or distribute risk.

Time for Boldness

When the Internet became the rage in the 1990s, the need for boldness in thought and action was assumed. It was the price of admission to the great wealth-gathering game. Every day seemed to bring forth a new, transformative technology. Every other day brought

Where Boldness Comes From

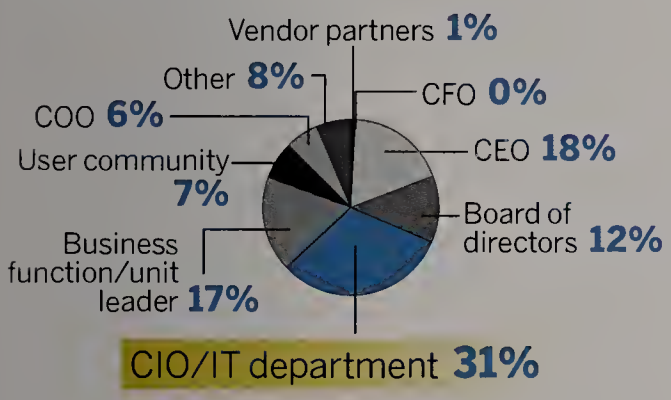
Among the honorees, boldness manifests itself in the use of technology, as well as in leadership and collaborative relationships, with CIOs and CEOs showing the way.

In what area is your IT organization most bold?

- Technology **69%**
- Leadership **67%**
- Collaboration/partnerships **63%**
- Culture **29%**
- Governance **18%**
- Budgeting **16%**
- Staffing **13%**
- Other **11%**

Note: Respondents chose the top three.

From where in your organization do bold initiatives most often arise?



Recipe for Rewards

An urgent business need is the most critical factor in bold decision making, while support at the top is the most important success factor.

What are the most critical factors in making the decision to go forward with a bold initiative?

- Urgency of the business need **82%**
- A cost vs. ROI analysis **52%**
- A strong risk mitigation plan **39%**
- Successful past examples of similar efforts **26%**
- What the CEO wants **20%**
- Gut instinct **19%**
- What your competitors are doing **14%**

Note: Respondents chose the top three.

What are the most critical factors in the success of any bold initiative?

- Support from your company's top executives **73%**
- A strong business champion **52%**
- Aggressive leadership **49%**
- Excellent project management **49%**
- Marketing the effort within the organization **31%**
- User buy-in **28%**
- Team building **21%**
- Thorough testing **13%**

Note: Respondents chose the top three.

CIO RESEARCH

forth a new business, a new paradigm and a spate of periodicals (including this one) chronicling and celebrating the new, new thing, whatever it may have been. The accepted wisdom was that companies that did not act boldly, did not innovate, did not change restlessly and relentlessly would not survive. Who had time to worry about risk? While you were worrying, the market—and your competitors—would pass you by.

And then the bubble burst. And almost overnight everything changed, including the accepted wisdom. Caution, especially as it concerned IT, became corporate America's watchword. Or, as Joanne Yates, distinguished professor of management in MIT's Sloan School and president of the Business History Conference, 2004–2005, says, "No one wants to be on the bleeding edge. People on average are afraid of technology and change."

But now at long last, the wounds are healing. We once again look to the future of information technology with something approximating optimism. And when we're hopeful about the future, we're more willing to take risks. In this changing climate, *CIO* sought to identify enterprises that were choosing to be bold.

We picked 100.

Bold Leadership

We surveyed these enterprises, asking them to identify the factors that contributed to the success of their bold endeavors and helped

them create a self-sustaining culture of boldness. (You can find portions of our survey on Page 42 and throughout this issue of *CIO*. The complete survey is online at *www2.cio.com/rcscarch*.) Overwhelmingly, they pointed to leadership.

For leadership expert Michael Useem, director of the Center for Leadership and Change Management at the Wharton School, bold leadership entails "a willingness to get into the game, a willingness to take on responsibility" as well as "a self-disciplined ability to face the big decisions and make them."

Useem, who is a mountain climber and takes his grad students trekking in the Himalayas to impart leadership lessons, believes these abilities can be learned. "Companies can teach it," he says.

"The sign of a good mountaineer is that they have learned from the prior mountains what cliff *not* to step off. It's the same in business," says Useem. "Going with your gut is a terrible idea unless it's informed by past experience; experience-informed intuition is a great platform for making bold decisions."

For insights on how bold habits can be developed, nurtured and inculcated in your staff and your enterprise, see Senior Editor Alice Dragoon's "8 Tips for Bold Leadership," Page 46, derived from a number of our Bold 100 CIOs. In "IT Rocks the Web," Page 86, honoree National Gypsum's CEO, Tom Nelson, describes the key decisions he made and the expectations he set for IT to ensure that the company succeeded in its bold bid to convince customers to do their business online.

Bold Flavors

Our honorees have been bold in many ways in the pursuit of many objectives. They've transformed their business models. They've created new products and services. They've looked to generate new revenue while reducing their operating costs. They've attempted to enter new markets and develop new business capabilities. They've looked to attract new customers while strengthening their ties to those customers they already have. To achieve all these varied goals, they've leveraged technology—both new and old. They've deployed their staffs and managed their budgets in creative ways. And because we believe that boldness is learnable, we've endeavored to extract the lessons these companies have learned in the process of recreating themselves.

In "At Play in the Fields of the New," Page 66, by Technology Editor Christopher Lindquist, we look at three organizations that are using technology to reconfigure the competitive landscape in their respective markets. In "A New Blueprint for IT," Page 52, also by Lindquist, we look at how several companies took the considerable risk of tearing up their old infrastructures in order to implement service-oriented architectures and, in so doing, made their businesses more agile and responsive to customers—both internal and external.

In "Putting People in Their (Right) Place," Page 60, Senior Writer Meridith Levinson focuses on four enterprises that changed the rules for their employees in order to meet new business demands, and in "Bold on a Budget," Page 72, by Senior Writer Ben Worthen, we learn that bold endeavors do not necessarily require huge financial investments.

Bold, Not Foolhardy

In all these stories, we keep in mind the lesson of the *Tulpenwoede*, the tulip mania, and never take our eye off the risk. Neither did our honorees. Some mitigated risk through relentless testing of new applications; others refused to sunset old systems until the new ones had been fully accepted. In most cases, change was introduced incrementally. In almost every case, business leaders and end users were brought into the process early. In all cases, the mitigation plan was kept firmly in the project's foreground.

As Useem puts it, when you begin to scale a mountain, "you need drive and boldness to get up. But you also need to look at the weather, make sure you have the right equipment and know how to use it. Everyone on your team needs to know the risk and what to do, and only then do you leave the parking lot. You want people who are bold but not foolhardy.

"On a mountain, getting to the top is optional.

"Getting down safely is required." CIO

Managing Editor David Rosenbaum can be reached at *drosenbaum@cio.com*.

How We Chose the Bold 100

The theme for the CIO 100 Awards changes each year to reflect what we believe to be most compelling and important for business. In recent years, we've selected integration, resourcefulness and agility. This year, we decided that the time was right to honor boldness.

Boldness, as we define it, is the willingness to embrace significant risk for the sake of great reward. Organizations that are bold are playing to win, not just to survive.

Last fall, we developed an online application that asked organizations to identify their endeavors that aimed for a great prize—be it revenue generation, business transformation or competitive advantage—and assumed significant risk, with a plan to mitigate it. We then solicited applications through advertising, newsletters and e-mail.

As the applications rolled in, our staff nominated additional organizations that we thought met our bold criteria, and we invited those nominees to apply as well.

Teams of *CIO* editors and writers then read through the applications and made recommendations. We asked ourselves whether the prize the organization was aiming for was great enough, whether the investment was large enough, whether the risk was significant enough, and whether the mitigation plan was smart enough. We compared one nominee to another. Inevitably, some nominees rose; others fell.

Eventually, we arrived at the magic 100. And because we believe that boldness is something that can be learned, we offer these 100 honorees as exemplars. *–D.R.*

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IN THIS STORY | 7-Eleven | Atmos Energy | Boy Scouts of America | Constellation Energy | UNICEF

8 BOLD Tips for Leadership

Being a bold leader calls for a complex balancing act between pushing for change and making sure the organization will accept it

BY ALICE DRAGOON

PHOTO TOP RIGHT BY ROBERT BURKE

BSA CIO Nate Langston: "When IT says, 'You have to do things this way,' the relationship with the customer starts to go south."

Constellation Energy CIO Beth Perlman: Her staff "always saw me pushing and not taking no for an answer, so they got bolder."

7-Eleven CIO Keith Morrow: "You get people involved so that change is something they're a part of, not something that happens to them."

Atmos Energy CIO Les Duncan won't pull the trigger on a bold move until he's sure he can minimize the risks.

When Les Duncan was a bold lad of three, a backyard bee-catching expedition ended badly, with him sputtering, "Oh damn! Oh damn! Oh damn!" as he fled from the yard.

The importance of risk mitigation was not lost on Duncan, who developed stealthier bee-catching techniques and, before branching out into snake catching, made sure to find out which snakes were poisonous. Now that he's CIO of Bold 100 honoree Atmos Energy, an upstart utility in Dallas, Duncan has put those early lessons in risk mitigation to good use. When his company acquired a same-size competitor, he had plenty of risk to contend with as he led the integration effort.

Risk mitigation is just one of many strategies that increase the chances that bold gambles will, in fact, pay off. Here's a roundup of bold leadership secrets from five of this year's CIO 100 honorees.

1
Build credibility through accomplishment

Bold initiatives are most likely to work if you've established a winning track record. From day one as director of IS at Bold 100 honoree Boy Scouts of America (BSA), Nate Langston knew that a portal would vastly improve information access, making it easier for executives and volunteers alike to do their jobs. But the existing IT system was in such bad shape—searches in the membership system took three to six minutes; membership reports often took more than a day to run—that he knew that before he could do anything else, he needed to fix the information pipeline. Accomplishing this reestablished credibility for IT and helped him pave the way for a portal pilot. "When IT comes to a meeting saying, 'You have to do things this way,' the relationship with our customer starts to go south," he says. "But if I can go into a meeting with a number of wins already under my belt, I get a much better response from the organization, and a willingness to follow where I want to take them."

2
Identify risks and implement mitigation strategies

Before Atmos Energy effectively doubled its size by acquiring Texas Utilities Gas, Duncan had already identified the risks involved in leading the integration effort. In addition to the usual timing and budget pressures, he had to worry about implementing brand-new, untested billing software and the fact that the parent company of Texas Utilities Gas was in the midst of outsourcing its back-office staff and systems. Undaunted, Duncan came up with appropriate mitigation strategies—including negotiating fixed-price contracts, splitting the work into manageable chunks, and doing early benchmarking in Hewlett-Packard's labs to test and fine-tune the new software well before the scheduled launch date. He also minimized the involvement of the acquired company's outsourcer, whose employees were worried about losing their jobs and whose managers were resisting giving up the business, by hiring a third-party vendor to handle data conversion. Today, the integration effort is on track to wind up successfully, on time and on budget.

Duncan won't pull the trigger on a bold move that could radically improve the business until he's sure he can minimize the risks.

3
Speak your customers' language

Make it easier for customers to embrace your plan by framing it in terms they're comfortable with. After Langston presented his portal vision in his second week at BSA, the CFO put an arm around his shoulder and said, "Nate, that may be your vision, but it's not necessarily the vision of the Boy Scouts of America." BSA leaders saw computers as data entry terminals, not executive tools. In fact, during Langston's interview, the COO

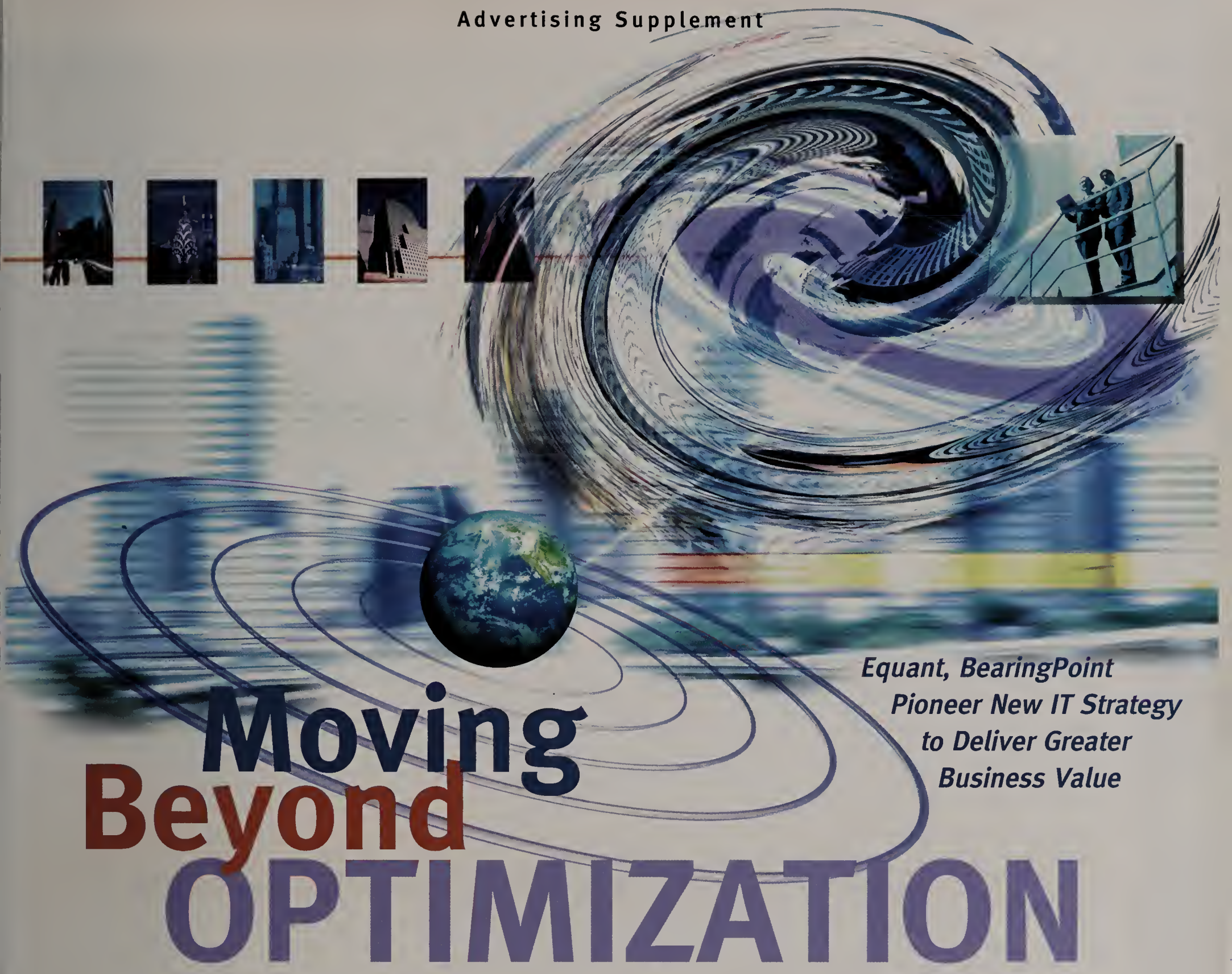
What's BOLD in... Retail

Leveraging customer data | The boldest retailers are no longer targeting consumers with promotions based on what's good for the company (for example, let's give Joe Average, one of our best customers, a 25 percent discount on Christian rock CDs because we have to sell off overstock in that category), but instead on what the customer really wants and needs, based on past purchases and demographic and psychographic information.

The wow factor | Retailers are increasingly heeding the words of consultant-authors Joe Pine and Jim Gilmore, who advise companies in their 1999 book, *The Experience Economy*, that the way to gain a competitive advantage is by providing a unique and delightful experience to consumers. For example, REI, with rock climbing walls in some of its stores, has had success selling the outdoor adventure experience. Successful companies such as Best Buy and struggling outfits such as Saks Department Store Group are all looking to provide consumers with positive and memorable shopping experiences, either to sustain a competitive advantage or to bring traffic back to flagging shops.

Eschewing markdowns | While most retailers are aggressively discounting merchandise and promoting sales virtually every other week to drive traffic and increase overall revenue at the expense of profit margins, the boldest retailers are holding their own and not lowering their prices. Some successful retailers, such as Pottery Barn and Anthropologie, even seem to be raising prices. *–Meridith Levinson*

Advertising Supplement



Moving Beyond OPTIMIZATION

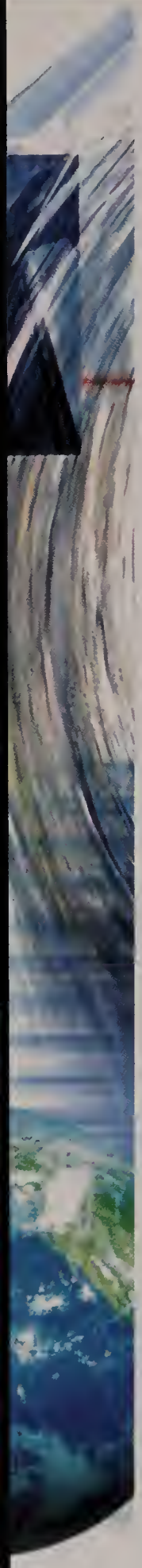
Equant, BearingPoint Pioneer New IT Strategy to Deliver Greater Business Value

equant℠

BearingPoint

CIO Custom Publishing

Executive Summary: As never before, IT organizations are called on to wring more business results from ever-more-limited resources. Optimizing network efficiencies to drive down costs has been the primary process for achieving this, but these traditional optimization strategies have limits. To reach higher, fresh ideas are needed. Equant and BearingPoint are pioneering a new path: the next evolution of optimization. Called "multidimensional optimization," it is a collaborative process — a step beyond technical and engineering efficiencies that leverages the collective intelligence and expertise of all stakeholders. Read this article to see how these partners have opened new frontiers in cooperation and 'coopetition,' with the potential to dramatically reshape business results and expectations. ›



There's no question that IT optimization has been widely embraced and recognized across the industry.

"IT managers are becoming more aware of today's WAN optimization technologies and what these technologies can do to improve the bottom line," said Vincent Lui, senior analyst with IDC's Network Management service, in a recent statement about communications infrastructure. "Rather than treating [optimization] as a simple spending-decision exercise, IT organizations view WAN optimization technology as a means to improve their network and application performance, and ultimately the user experience and productivity of the global workforce," he said.

To be sure, comprehensive planning and innovative engineering can help any organization optimize network and IT infrastructures to achieve such goals as reliable performance and cost reduction. With the assistance of experienced personnel, the application of leading tools and ongoing measurement of results, optimization efforts can yield:

- Cost control and efficiency
- Accurate and rapid assessments of needs to support better informed decisions about technology investments
- Process and application redesign and tuning before, during and after deployment
- Long-term reliability and scalability

Yet even WAN optimization has its limits. Based only on this focused engineering/WAN viewpoint, optimization can sometimes fail to respond to opportunities. One of its central weaknesses is that it often treats vendors and partners as "arm's length" resources. The management of an IT organization, for instance, might develop a plan of action to propose to its own management. Then lead contractors and subcontractors may be assigned to tackle their portion of the problem. The cumulative wisdom, knowledge and creativity of all the organizations that are engaged are never fully tapped. Instead, the military-style, top-down approach gives everyone a job to do without giving anyone a sense of the overall mission. Talent and solutions that should bubble up are ignored or suppressed. Efficiencies that could be identified or duplication that could be avoided are not.

In short, the bad habits that too often cloud the client-vendor relationship are institutionalized.

A STEP BEYOND

Equant and BearingPoint are two recognized leaders in technology, with a shared vision for moving optimization beyond the narrow, traditional band of belt-tightening and IT head-counting to a methodical reinvention of visioning and project management.

As a leading provider of global business communications solutions for multinational organizations, Equant creates business advantage for its customers, enabling them to expand and support their business operations, implement new business processes and improve efficiency by providing global, integrated, secure and customized communications services.

BearingPoint is one of the world's largest business consulting, systems integration and managed services firms, serving government agencies, Global 2000 companies, medium-sized businesses and other organizations.

Together, Equant and BearingPoint are taking optimization beyond the traditional hierarchical management model to "multidimensional optimization" — leveraging the latent power of individuals, organizations and relationships.

Where as traditional WAN optimization steers a client to ask the vendor, "How can you fulfill our vision?" multidimensional optimization asks, "How can we, together, forge a new and better vision and deliver 'beyond expectation'?"

Similarly, traditional WAN optimization is essentially linear — a sequence

Case Study:

MULTIDIMENSIONAL OPTIMIZATION is based on long experience and on a seminal project at BearingPoint itself in which Equant played a key role. BearingPoint, which spun off from the accounting firm KPMG in 2002, has more than 150 offices in 27 countries. The company could have adopted the same style of loosely federated IT resources used at its parent. However, BearingPoint's leadership was determined to take advantage of a "greenfield" opportunity to redesign IT infrastructure along the most efficient lines possible. Daring to live up to the adage "Physician, heal thyself," BearingPoint chose not to take any infrastructure elements or personnel from KPMG, but instead started fresh with a centralized structure that would eliminate historical "islands."

Early on, a Multiprotocol Label Switching (MPLS) virtual private network (VPN) from Equant was adopted along with a hosted WAN infrastructure. With that as a starting point, BearingPoint saw an opportunity to adopt IPT (Internet Protocol Telephony, also known as Voice Over IP or VOIP), too. But rather than simply accepting the benefits of this

Equant and BearingPoint Pioneer Multidimensional Optimization

hardware-focused integration, in which the same "plumbing" would support both telephone and data, BearingPoint looked to achieve convergence at a higher level, with applications in which convergence could fully support business goals such as integrating voice, data and video, as well as better supporting the need of most of the professional staff to function in a fully mobile environment.

As IDC noted in a discussion of the project published in IDC Insight, "Given the nature of the company's business profile, this vision is not a technological luxury but a business necessity."

The solution BearingPoint co-developed with Equant and a group of other participants delivers just that, everything BearingPoint needs to be more competitive. Mobile workers retain their personal phone numbers, voice mail, contact list, Email, network connections and security wherever they happen to be.

Furthermore, the embrace of IPT has spawned the adoption of a number of other important initiatives. For instance, each day a "Morning Report" is pushed to the IP-based phone screen of many users across the organization, providing important business information extracted from backend systems and XML-coded. PDAs are included, too, using an AvantGo server.

Now, practically all telephone calls are routed via the IP network, and, where PSTN cannot be avoided, Equant has been able to provide favorable rates. Bringing a full range of services to the relationship, Equant ensures that Bearing Point's IPT infrastructure stays up and running and provides its service technicians to correct problems when necessary.

Aside from the very real productivity benefits that will accrue long term, BearingPoint's IPT convergence — supports LAN, WAN, voice and data — has directly saved $26 million in IT costs over its first two and a half years of operation, including a dramatic drop in telephone costs.

"Hoteling" of the company's mobile staff (rather than supporting permanently dedicated office space for each worker) has slashed office space requirements by 40 percent. This has been accomplished with the help of AgileQuest software and servers, which are collocated with Cisco CallManagers that are managed by Equant. Thus, while supporting some 17,000 employees worldwide, BearingPoint's IT technical staff totals only about one hundred.

Navigating through this greenfield experience was no walk in the park, though. "We had gone about as far as we could with our first tier optimization, MPLS, so we went to our business leaders and looked at the issues that were on the table," says Chas White, executive vice president and corporate CTO at BearingPoint. It was a long list. Then he says, they worked together to explore how they might be able to optimize the whole platform.

"Partnering with Equant, we decided to try to take a step beyond and try something new, so together we set up an IPT consortium," explains White. The "experiment" ended up generating enthusiasm and strong participation from eight main organizations, including BearingPoint. Most important, it began to yield results, sometimes unexpectedly, in the goal of platform-wide, application-focused optimization. "Different participants have taken on different levels of activity since we began," he says. And a wide range of individuals have stepped up to the plate, bringing diverse ideas and fresh enthusiasm.

White credits this process with taking the project into the "bells and whistles" stage, adding a new and unanticipated level of value. Indeed, he adds, "It has offered new opportunities for everyone involved."

And it has become the basis for a new style of consultative partnering that focuses on the opportunities that multi-dimensional optimization offers to all parties involved.

"At a high level, multidimensional optimization is a matter of structuring how the parties organize and manage their efforts."

— Chas White, executive vice president and corporate CTO, BearingPoint

of steps and a straight line reporting on an organizational chart—while the multidimensional optimization that Equant and BearingPoint practice is "n-tier," bringing together best practices, relevant experiences, intellectual capital and ideal technologies from all stakeholders. In the process, multidimensional optimization "optimizes the optimizers," leveraging normal business processes and incentives to get everyone not only on the same team, but effectively motivated to be part of the same vision as well.

Together, these partners aim to deliver a higher level of performance, determining how to interweave what each provider brings to the table. "It is about more than driving out cost. It is about enablement," says Sean Connolly, Equant senior vice president.

Equant and BearingPoint aren't just talking about the idea of multidimensional optimization— they are doing it (see Case Study, page 2). That means this strategy is not just a promising innovation – it's already tried and tested.

"When most companies focus on optimization, the driver is often cost or an impulse to drive efficiencies on one specific axis — and the time frame is tactical," says Chas White, executive vice president and corporate CTO at BearingPoint. For better or worse, he says, the process often ends up hardening the existing infrastructure, rather than making it more potent.

By contrast, multidimensional optimization yields a fresh perspective, where a consultative thought process replaces a product-oriented approach. "The insight we gained was to think beyond a mere effort to streamline around hardware opportunities and to envision an opportunity for application convergence," says White.

"At a high level, multidimensional optimization is a matter of structuring how the parties organize and manage their efforts," he continues. "It has to do with looking at your stable, your first-tier optimized technologies and your business challenges, and then mapping opportunities for optimization for a given business need."

Even as multidimensional optimization opens the door to added functionality, it can actually yield a lower cost solution that bridges the gap between the "plumbing" and the underlying business requirement.

"One of the interesting dynamics is the real cooperation that emerges," says White. "We have seen people generate new and fresh ideas within their own organizations and at the conference table between the two groups."

To make multidimensional optimization work, the central management must be ready and able to think entrepreneurially, encourage collegiality and recognize when value is being created—even if it's not something that might have been defined in an RFP or requirements document.

Multidimensional optimization "maximizes the scope of the TCO discussion," says Connolly. Instead of decisions made on a partner-to-partner basis, suppliers and clients are at the center. There, the stakeholders can provide intelligence to orchestrate the whole, leveraging improved efficiencies across each of the participating organizations and driving the creation of better solutions.

"The client-partner ecosystem ends up looking different," Connolly says. "People will take different places in this because there are strong elements of coopetition. It requires clear rules of engagement that must promote openness and flexibility."

"When you talk to a CIO about collaboration, it is typically a project-based discussion, which sometimes ends up encompassing areas outside the CIO's responsibility," says Lisa LaBonville, general manager and vice president of Equant's Focus 100 accounts. "This methodology will let CIOs break through those silos and bring innovation and efficiency into the business." •

FOR MORE INFORMATION

For more information on Equant, BearingPoint and multidimensional optimization, visit www.equant.com

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had told him it would be snowing in Texas before he'd put a computer on his desk. After his portal proposals were shot down twice, he repitched the idea as an electronic newspaper and won approval for a pilot, which ultimately led to a full rollout.

4
Fight for your vision

If you've got a great business case for your bold initiative, don't back down. At Bold 100 honoree Constellation Energy, CIO Beth Perlman says that her boldness in pushing for such things as a common desktop platform—an effort IT believed in but, given past failures, didn't think was feasible—has rubbed off on her staff.

"They saw me always pushing and not taking no for an answer, so they got bolder," she says. Perlman got her common desktop platform, as well as an overhaul of the entire computing platform (servers, storage, backups, management software), garnering the same savings the company had hoped to achieve through an outsourcing deal she convinced her colleagues to nix.

5
Pick your battles

While it's important to stick to your guns when it matters, you also need to know when to back down. At Constellation, Perlman picks her battles by deciding what she can and can't live with. While she can't live without standards, for example, she might be able to live with putting an extra 10 PCs in the field if users insist it's absolutely necessary. "If it's just a difference of opinion and doesn't make a big difference to the bottom line of the company, it's not worth fighting about," she says.

6
Build buy-in on the front lines

By definition, bold business moves require change. And change requires management. So bold business leaders must make sure that employees who will be affected by the change buy into the strategy. At Bold 100 honoree 7-Eleven, CIO Keith Morrow resuscitated a failing business intelligence project by backtracking and engaging end users. Addressing their specific but relatively straightforward needs got them on board. Similarly, Morrow and his colleagues are involving frontline employees in the rollout of 7-Eleven's new Model Market strategy. Model Market, which relies heavily on a proprietary retail information system and training technology, empowers each of the company's 5,800 North American stores to take ownership of product and ordering decisions. An internal trade show and sampling event called the University of 7-Eleven gives store managers and franchisees a sneak peek at forthcoming products and new technologies (such as the wireless store platform rolling out this year), emphasizing what'll be in it for them to stock the new products and apply the new technologies.

"You've got to get people involved, excited and energized to where the change is something they're a part of, something they make happen as opposed to something that happens to them," says Morrow.

7
Cultivate champions of change

In addition to energizing frontline workers, bold leaders must also rally the troops at the executive level. "You have to create champions across the whole organization who will embrace your vision of changing the organization," says Bold 100 honoree UNICEF CIO André Spatz. "That will multiply the power of the CIO." Spatz, who boldly chose an IP-networking standard back in 1998 and pioneered running it over satellite two years later, has coached business colleagues to become highly engaged project owners, leading by example. "I banned sponsors who are spectators and instead demanded owners," he says. "Owners have skin in the game. We don't want spectators, only actors." Through repetition and Spatz's perseverance, engaged ownership is now an embedded business practice at UNICEF.

Engaging obstructionists is also critical. "It's never easy to change, and there's always a squeaky wheel," says Perlman. "When certain people speak up, they get everyone else twisted. You've got to give them a lot of attention so that they don't rile everyone up." Perlman identifies naysayers and assigns someone to work with them one-on-one to make sure they come around.

8
Shoot for evolution, not revolution

If bold, transforming initiatives are overly disruptive, they'll be rejected. "I've seen many disruptions that were not evolutionary," says Spatz. "The organization would not embrace them. To make [change] sustainable in the long run, you have to address people, process and technology—without exception, no shortcuts." Although it can be slow and painful to deal with all three at once, Spatz insists there's no other way to effect change. "Certain things take root; others you keep on reinforcing, reinforcing," he says. "It takes a long time. You need a lot of support, relationship and backbone to sustain changes over the long run." CIO

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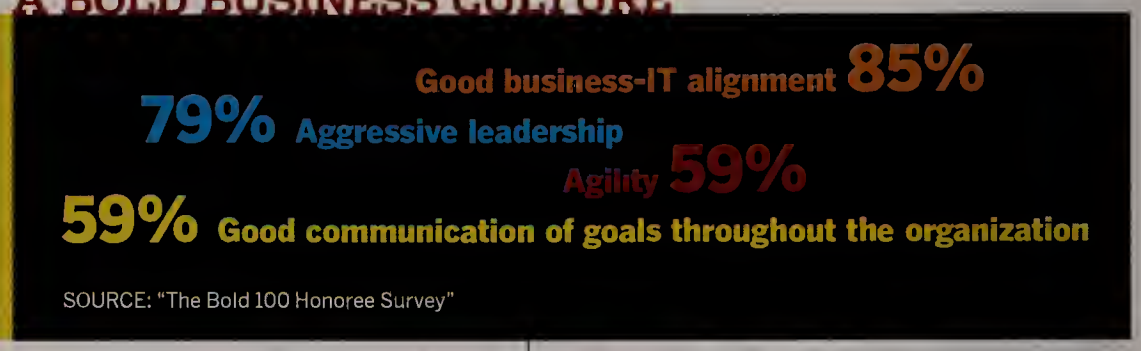
THE TOP 4 INGREDIENTS FOR A BOLD BUSINESS CULTURE



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IN THIS STORY | 1-800-Flowers.com | CompuCredit | ProCard | Wells Fargo

A New BLUEPRINT for IT

A service-oriented architecture can be a powerful tool for changing your business. The keys to a successful SOA project are setting limits, mitigating risks, and giving the business what it wants and needs.

BY CHRISTOPHER LINDQUIST

Ian Hill, ProCard COO: SOA is "bigger than just technology. It fundamentally changed the way that we do business."

A service-oriented architecture isn't a technology; it's a way of doing business. It can even be a way of transforming your business.

That point was driven home time and again this year by SOA-using CIO 100 honorees (and there were lots of them). Reworking your IT framework as an SOA takes time, money, nerve and a strong business driver. Done correctly and for the right reasons, an SOA can save money on development costs (eventually) and increase your agility. But getting to an SOA requires bold thinking and even bolder action. To do it right, everyone in your enterprise, both on the IT and business sides, must change how they look at the business. It can force business-side people to put off short-term opportunity in favor of long-term goals. It can make IT developers think in terms of service levels and reusability while simultaneously forcing them to relinquish complete control over processes such as quality assurance. It's about change management, technology management, risk management and simply dealing with management.

If all that sounds scary, it is. But step into the deep, dark SOA woods and you'll find some trails are already being blazed. And our bold honorees have even left a few breadcrumbs for you to follow.

SOA Defined

At its simplest, an SOA turns application functionality into the software equivalent of Lego bricks. Take a piece of software (say, a customer-number verification tool), strap a well-defined interface onto it, and let other applications use the new "service" as needed. Create a library of such mix-and-match parts, and you can build composite applications to meet almost any business need, the same way Legos can morph from castle to crocodile to catapult when the same components are rearranged. But unlike object-oriented programming, in which chunks of reusable code are compiled to create new applications, services can live on widely distributed servers, ready to be tapped only when needed. How services are built, on which operating systems they run or within which applications they reside aren't important as long as they support standard connection interfaces.

If that sounds like pie in the sky for the IT crowd, you're right to be skeptical. SOA isn't a cure-all. Nor will it (or should it) replace every tightly integrated instance in your company. But employed properly, SOA can grease rusty IT joints and make the whole organization more flexible—a bold goal that made SOA a worthwhile risk for several of our honorees.

How SOA Can Change the Business

ProCard had a tough decision to make. The credit card services provider's suite of products touted features that its biggest competitors (such as Visa) didn't have, including the capability to update card holders' personal information (such as increasing their credit limit or changing their mailing address) in real-time instead of with the standard overnight batch process—a boon for customer service and a sales edge in the extremely competitive credit card market. But ProCard knew that the competition had to be thinking about developing similar solutions. So ProCard had a choice: Continue to use its real-

PHOTO BY DON CUDNEY

Guido Sacchi, CompuCredit CIO: "It's not easy to find people able to build these types of architectures. It created strains on recruiting."

time advantage as a lever to pry open new business, or boldly morph the feature into a product and turn its competitors into customers. ProCard risked the latter route, and it used an SOA to get there.

ProCard could have pulled the real-time code out of its application and rewritten it as a standalone product specifically for Visa (likely the fastest and easiest option), but the company had a vision of turning the feature into something widely available to numerous potential partners. And it could imagine other pieces of its application being spun off as separate products as well. An SOA approach let ProCard create a service-based product that customers could quickly integrate into their own operations, and it provided a foundation that will support other service products in the future, should ProCard decide to go that route.

But bold ideas often meet resistance, and this was no exception. The biggest hurdle to making the shift was convincing the business side that the goal—that is, modifying ProCard's business model—was not only realistic but necessary. "Technically, our folks got it very quickly," says ProCard COO (formerly CIO) Ian Hill. "On the business side of the house, it took a little bit longer for folks to grasp the concept that we were going to enable a competitor." One of the keys, Hill says, was to make sure he focused not on the technical advantages of an SOA but on the potential business benefits of moving from monolithic application vendor to service provider. "I believed that if we had the opportunity to offer our functionality in pieces via services," Hill says, "there would be a significant piece of business out there for us that wouldn't be there [otherwise]." He notes that a number of banks wouldn't consider buying ProCard's suite of credit card processing tools (sometimes because they already had purchased products from other credit card associations). But those same institutions might be very interested in individual components—including the real-time updating feature—thus opening new markets for ProCard. "We don't need to be the total solution for the institution," Hill says.

"This is the dream [of SOA] come true at some level," adds Hill. "It's bigger than just technology. It fundamentally changed the way that we do business."

Goals, Risks and Mitigation Strategies

ProCard

+ **Goal:** Wanted to recast its business, moving from provider of a monolithic credit card services application to service provider offering individual features that would easily integrate with other systems—including those of their competitors.

+ **Risk:** Selling pieces as services—particularly those seen as having competitive advantage—could have reduced ProCard's chances for selling its entire suite.

+ **Mitigation strategy:** Using a service-oriented architecture (SOA) instead of a one-off connection to Visa allowed ProCard to shop the services to other potential customers more easily, possibly opening up new markets for the company.

CompuCredit

+ **Goal:** Wanted to reduce the complexity and rigidity of its IT infrastructure to decrease costs and improve call center efficiency.

+ **Risk:** Needed to demonstrate value of SOA quickly to assure support from the business side.

+ **Mitigation strategy:** Found a pair of well-defined opportunities that were both high-value and quick-ROI, and would provide plainly visible metrics for success.

1-800-Flowers.com

+ **Goal:** Wanted to increase IT flexibility and scalability while eliminating silos in order to meet the needs of its rapidly growing business.

+ **Risk:** Desire by SOA purists to service-enable everything could have slowed development and prevented the business side from getting what it needed quickly enough.

+ **Mitigation strategy:** Architecture committees and development groups worked together to strike a balance between the flexibility of services and the needs of business. *–C.L.*

PHOTO BY STAN KAADY

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The Technology Is Hard; Staffing Is Harder

SOA practitioners also make it clear that companies should not bite off a choke-inducing hunk when moving to an SOA. One way to minimize the risk of throwing the enterprise into turmoil while reshaping it is to pick a small or lucrative piece of the business to recast under an SOA as a means of getting your feet wet. Guido Sacchi, CIO and executive director of shared services at consumer credit service provider CompuCredit, says he decided last year to go with an SOA for his company for several reasons: first, to reduce the complexity of his overall IT infrastructure and second, because he felt he could get results—in this case, dramatically reduced costs and increased flexibility—quickly, even before the total architecture was in place.

To maximize his investment and reduce his risk, he chose two pieces of his call center operations—inbound customer service and outbound collections—as early test cases for SOA, primarily because they were both solid revenue generators as well as high-cost. They also had the added benefit of providing relatively easy-to-quantify metrics (such as reduced time per call) that could be presented as proof of the SOA's success.

The systems involved were also highly complex, with numerous interfaces built on extremely inflexible applications and complex underlying code. "If you wanted to make a change to a piece of software that supported a certain business process," Sacchi says, "I would have to rewrite the application." For instance, he says, if he had wanted to build extract, transform and load (ETL) software in the past, he'd have had to build it for each application separately. With an SOA, Sacchi says, he wanted to create applications as flexible building blocks that would allow for easier process changes and reduced development time on future projects. So he could build his ETL once, for example, and expose it as a service to multiple applications.

It worked, Sacchi says, and provided a measurable reduction in call time. Instead of forcing call center staff to jump back and forth between applications, the SOA allowed his team to integrate features such as an automatic payment function into a single-user interface. And the IT department didn't have to rebuild the feature in every application. But the results came with a learning curve, particularly in the area of staff training and skills.

"In hindsight, I should have concentrated on [staffing issues] a little bit more," he concedes, noting that it was difficult to find IT people with SOA experience. And he advises other IT executives with SOA on their minds to pay attention to staffing as well. "Do you have the right skill sets, and can you train your people?" he asks. "It's not easy to find people able to build these types of architectures. It created strains on recruiting," he says. "Even the vendors don't have that much talent in this space right now, and you really need to get top talent in-house."

ProCard's Hill had somewhat different issues with his staff. He says that while his development teams grasped the technology behind SOA quickly (they had already been working with .Net and Web services, around which ProCard built its SOA), making the move from application builder to service provider required a significant change of perspective. Moving to a services stance, for instance, forced ProCard to revamp how it handled development, testing and quality assurance. "In the past, we had complete control over QA cycles and when we were going to test things and where we were going to release code," Hill says. "Now we have Visa, which has a front end using us as middleware to a back end." That change meant ProCard no longer could develop or quality-test the end-to-end product in the same way it had in the past, when the company controlled everything from the back-end database to the interface the customer used to access ProCard's tools.

The Bold Compromise on SOA

Experience teaches that a successful SOA requires evangelism but not zealotry. It's critical to curb the urge to service-enable every project. "Some [SOA] purists think we can have common services across all seven [of our] brands," says 1-800-Flowers.com CIO Enzo Micali. "Practically speaking, our intent is to have a set of business services per brand."

Micali says that he has an architecture team and a pair of development teams (one for customer-facing application services and the other for core application services) whose job, at least in part, is to identify which projects are suitable for development within an SOA framework. "Between those folks and myself, we find commonalities in business requirements and expose things as needed," he says. In the end, according to Micali, common sense must prevail to strike a balance between business users' desire for immediate gratification and software developers' drive to perfection.

He also notes that when time to deployment or overall application performance are the most critical factors, one-offs, rather than a service, are still the best way to go. And he's not

What's BOLD in... Transportation

Modernization | From trucking companies to airlines, leaders are assuming the risks and costs associated with lessening their dependence on decades-old legacy systems, thereby ultimately increasing their agility and reducing their costs.

Increased transparency for the customer | Bold transportation companies are doing the back-end work of integration in order to improve their customers' ability to see what's going on. (For instance, a shipping company allows a customer to know where his package is or even to contact the driver directly.)

M&As | Mergers and acquisitions continue across the entire transportation space (airlines, hotels, shipping). Only the bold and smart survive. *–Stephanie Overby*

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–Laura DiDio, The Yankee Group, April 2004
Linux, Unix, and Windows TCO Comparison

The Yankee Group, a global research and consulting firm, concluded that a significant switch to Linux from Windows or Unix could cost three to four times as much without delivering tangibly better performance or business value. These findings are based on a non-sponsored worldwide survey of 1,000 IT administrators and C-level executives in midsized and large enterprises.

To get the full study, visit **microsoft.com/getthefacts**

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alone. Danny Peltz, executive vice president of Wells Fargo Wholesale Internet and Treasury Solutions, has watched his group's infrastructure evolve into an SOA during the past five years (a period during which the company enticed more than 70 percent of its commercial banking customers to use Web-based, service-oriented tools instead of client-side software or live agents, resulting in faster speed to market with new products as well as lower costs). But, he says, many of his projects are still written for a single case rather than being opened up as a service. While he has found benefit (including reusability) in moving some core pieces of functionality (such as authorization tools) to the SOA, he warns that there are hidden costs to doing so. Simply building a component as a service isn't the end of the process; the company must also bear the ongoing cost of managing that service's use and reuse. In some cases, such as an authorization or security parameter or a search facility that can be reapplied to many applications, that overhead is justified. But there are times when taking advantage of an immediate opportunity or the need to have a tool specifically customized to one application negates the value of SOA. He notes that companies have a choice presented to them by their business units of "building once for all and building once for me," adding that, "We lean more toward the 'building once for me.'"

Enzo Micali, 1-800-Flowers.com CIO: Even if an effort is ripe for service orientation, it pays to "give the business what they need when they need it."

THE TOP FIVE BOLD GOALS

1. Develop new business capabilities **69%**
2. Create new products or services **62%**
3. Increase customer loyalty **59%**
4. Reduce operating costs **59%**
5. Add IT functionality to support business growth **55%**

SOURCE: "The Bold 100 Honoree Survey"

Micali agrees, noting that some SOA purists will always say, If everybody could just wait until I'm done, we'd have this great service. But, he cautions, in the business world you don't always have the luxury of time. Instead, he advises that even in cases where an effort is ripe for service orientation, it pays to "try to give the business what they need when they need it," even if you know that you'll want to generalize the application later.

Reaping SOA's Rewards

Despite these caveats, there are plenty of benefits that SOA can provide beyond the flexibility for which it is so often praised. In cases where a common function would previously have been rebuilt for each new application, building it as a service can reduce development costs. "The marginal cost for putting on the next Web service is zero," CompuCredit's Sacchi says. For instance, he notes, connecting his service-enabled automatic payment feature to the interface utilized by collection-business employees was simple, even though the payment component exists in an entirely different application. By obviating the necessity for agents to switch between multiple customer service applications when dealing with a customer, it allows for faster service and reduced costs.

The SOA provided Sacchi with another benefit as well: governance. Moving to an SOA required the formation of an architecture team to determine the best path for the company as a whole. But what started as a tool for managing the move to SOA has become a central way of managing IT at CompuCredit.

"Now we do everything that way," Sacchi says.

Given our honorees' success, SOA is a concept every CIO should investigate. But if you do decide to go the SOA route, practitioners advice caution and commitment.

"Make sure you know what you are getting yourself into," Sacchi warns. "It's not just about the architecture: You need to dedicate the entire organization to services, to make a commitment to say, 'I'm running a service-oriented organization, hence I need an SOA.'"

Micali concurs, noting that the best route is the slow route. "Don't try to boil the ocean," he says. "Build it over time, and give the business [users] what they need." CIO

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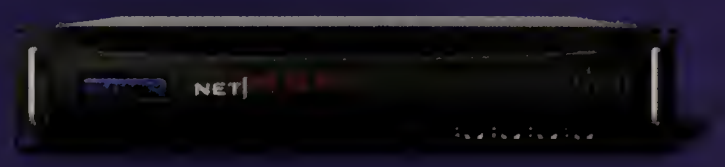

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IN THIS STORY | Carlson Marketing Group | Cooper Communities | Delaware Department of Technology and Information | Fireman's Fund Insurance

Putting People in Their (Right) Place

When your business goes in a new direction, your IT organization is in for a wild ride. Four CIO 100 honorees steer their staffs to new jobs, better performance and different approaches to building systems.

BY MERIDITH LEVINSON

Delaware CIO Tom Jarrett eliminated the civil service system that guaranteed IT workers job security. Every employee had to reapply for a job.

Cooper Communities VP of IS Jim Craig posted a chart of IT project performance on the main floor of headquarters—in full view of all employees.

Fireman's Fund CIO Fred Matteson redefined the jobs of his staff so that workers were performing higher-level functions, becoming insurance experts.

Bold business initiatives don't pay off on paper. People either make or break them.

Indeed, IT departments often have to be reinvented and employees retrained so that intrepid companies can pave new paths to fortune. According to our survey of this year's CIO 100 honorees, only 13 percent say they've deployed their people in a bold manner. But if your staff isn't structured to support a new strategy, if they lack the necessary skills or resist change altogether, failure, if not guaranteed, is a strong possibility. That is why considering staffing is so critical before implementing new ideas.

CIO recognized several of this year's honorees for the bold, unorthodox changes that they made to their IT organizations.

So Long, Civil Service

Nearly four years ago, the state of Delaware dissolved its underperforming IT department and hired CIO Tom Jarrett to rebuild it. Jarrett (at Governor Ruth Ann Minner's behest and with the legislature's blessing) also eliminated the civil service system that guaranteed IT workers job security and regular, albeit marginal, raises. Every employee had to reapply for a job in the new Delaware Department of Technology and Information. Workers who were rehired got salaries competitive with the private sector in the area but had to meet performance goals to keep their jobs.

Jarrett cut 90 percent of the old department's senior and middle management positions, and replaced the remaining ones with new functions and titles. He and his team then met with each of the department's 200 employees to tell them whether they had a future with the new agency.

Although there was no IT employees union defending their jobs, those who weren't rehired were guaranteed a job elsewhere in state government. In the end, 79 percent of the staff survived.

Jarrett says that since the transformation, his staff has finished all of its major projects on time and on or under budget. But his personnel practices have created a rift between the department and other state agencies that are still on the civil service system. Lynn Hersey-Miller, the department's chief program officer, says that her team is perceived as pushy because they have performance goals to meet. IT workers are also resented for their higher salaries. "If one of my folks makes a mistake, I've heard people say, 'You shouldn't be making those kinds of mistakes with the money

you make,'" she says. "It's just a difference in culture."

But it's made a difference in the state of Delaware.

Radical Accountability

Before Jim Craig joined real estate developer Cooper Communities as vice president of information systems in 2000, the company's business units had given up on their IT department. Some were, in fact, hiring their own IT workers because the corporate IT group couldn't get itself organized to address the business units' needs. Craig at first considered cleaning house, but he decided that would be taking the easy route. And that, he says, is not his style. Instead, he chose to light a fire under his existing staff, because he believed that they had both the passion and the potential for success.

Craig laid the groundwork for the transformation by creating an internal service-level agreement for the help desk. He also began to track network uptime, as well as the efficacy of the software development process. Then he posted charts illustrating the latest network and help desk stats. He mounted one in the IT department, and he hung one on a bulletin board on the main floor of Cooper's headquarters—in full view of all the company's employees.

THOSE DARN USERS

When asked to identify where the greatest opposition to bold initiatives comes from...

20% of our CIOs named their user community, and

28% answered business unit leaders and business function leaders.

SOURCE: "The Bold 100 Honoree Survey"

The charts revealed that more help-desk calls than anyone had realized were left unresolved because the volume of calls was so high and the help desk was understaffed. The metrics also revealed the necessity of establishing a triage system for prioritizing calls. In addition, the IT staff discovered (as did everyone else) that it wasn't very good at estimating the amount of time and money needed to develop internal software.

Not surprisingly, the IT staff was frustrated, which is what Craig wanted them to be. He then helped them create performance objectives for themselves and tied their raises and bonuses to achievement of these objectives.

Employees found the accountability threatening, but Craig explained that these steps were necessary to get business leaders to trust IT with strategic initiatives. Such projects, he added, would be more satisfying to work on than the repetitive job of maintaining existing systems.

Almost five years later, only two members of Craig's original

Nobody Likes Change

Four ways to manage the risks of shaking up your staff

Whether you're restructuring your IT department, deploying new technologies or responding to new business requirements, one thing is certain: Your staff will become unsettled. Some may quit; others may spend more time worrying than working. Anxiety eats into efficiency. Face it: Nobody really likes change. But CIO 100 honorees employed these tactics to mitigate the risks of their bold staffing maneuvers.

1. Do It Fast

Fireman's Fund CIO Fred Matteson and Delaware Department of Technology and Information CIO Tom Jarrett both made it their business to quickly identify which IT workers had a future with their new organizations and which did not. By getting the winnowing-out part of the process over with fast, they quelled anxiety, restored productivity and were able to focus their attention on the transition rather than dealing with disruption and gossip.

2. Accentuate the Positive

When he helped dismantle the Delaware IT department's civil service system, Jarrett focused on what was in it for his employees. Because money talks, he emphasized how much more they would earn in the new organization, and how being paid for performance would make them more attractive to private-sector employers.

Jim Craig, vice president of information systems with Cooper Communities, convinced his staff to live with new (and public) performance objectives with the promise that the work available to them would become more interesting once they met the new internal service-level agreements.

3. Train Them (They Like It)

Matteson at Fireman's Fund and Chuck Clabots, former vice president of information management, services and products at Carlson Marketing Group, prevented the mass exodus of their IT workers with the prospect of training in hot skills such as Java, .Net and service-oriented architecture.

4. Use Carrots (and Sticks)

When Matteson decided to outsource maintenance to refocus his staff on application design, he estimated that about 20 percent of his staff might be ready to retire. So he made their severance pay dependent on their willingness to stay until the transition to the reengineered IT organization was complete.

–M.L.

The best view in the city, the country, the world.
At one time, DHL had a data center in every country in which it operated. The result was a massive collection of small IT networks—without a mission control. With the help of HP Services and HP OpenView software, hundreds of data centers became three. By consolidating, DHL is now better able to share information, implement IT changes globally and "see" their entire network from a single point of control. Now, change never goes unnoticed. For more on HP's Consolidation Solutions, visit hp.com/info/consolidation
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team have left the company, and the staff has secured the business's confidence. Their newfound good reputation helped Cooper's commercial property investment business win two leases worth more than $2.5 million in its new corporate headquarters, by providing the tenant with IT services. Cooper's business units have now surrendered their personal IT workers, and the metrics Craig established, now webcast companywide via a corporate portal, show a stable network, a responsive help desk and accurate time and expense estimates on software projects.

Development for Customers, Not Developers

In 2002, Carlson Marketing Group (CMG) embraced a new business model. The company ceased building one-off marketing solutions for customers and started mass-customizing them. To support this transformation, Chuck Clabots, CMG's former vice president of information management, services and products (he left in June to become a principal with The St. Pierre Group, a management and technology consultancy), united nine IT departments that were organized to cater to specific clients. The combined IT shop was structured around the 27-plus marketing services CMG sells, such as loyalty programs or merchandise fulfillment.

To accommodate this new business model, the IT department had to change its approach to application development. Instead of building each tightly integrated application from scratch, it had to build them from components that could be easily configured and integrated depending on a client's needs. Clabots adopted the Rational Unified Process (RUP), an iterative software design methodology, as well as the IT Infrastructure Library (ITIL), a set of best practices for delivering and managing high-quality IT services. RUP provides processes for business analysts to define customer requirements for each service, which developers then turn into software components. The department uses ITIL to diagnose and solve problems with applications that are in production.

Adopting the new approach required developers, who were used to building applications their own way, to learn a specific process. It also required greater interaction with clients in order to examine their business processes, rather than simply obtaining the functional requirements for a system and then developing a prototype.

Because CMG had the nerve to turn its business model upside down, Clabots says the privately held company has maintained its profitability despite declining gross margins.

Same People, New Jobs

In 2003, after years of mediocre financial performance, Fireman's Fund decided that the way to become more competitive was to make life easier for the agents who distribute its insurance policies. This shift to a more aggressively sales- and customer service-focused business meant that the IT department—including 200 programmers heretofore mainly devoted to maintaining disparate legacy policy processing and underwriting systems—had to quickly get better at designing and developing systems that provided a competitive advantage and differentiated Fireman's Fund from other insurance agencies, such as applications to help agents get quotes to customers faster.

So CIO Fred Matteson outsourced 200 maintenance jobs to IBM, while 30 additional workers took other jobs with IBM. A few employees left the company. Matteson set about turning the remaining 250 employees into insurance business experts who were also well-schooled in Web-based technologies.

Matteson redefined the jobs of his staff so that workers were performing higher-level functions—such as architecture planning, application design, project management and managing relationships with the business. "These aren't just new names for old jobs," says Matteson. "You must really do and act and think and plan differently."

For example, programmers who became application designers no longer do any programming. Instead, they plan how to design cost-effective features for the business systems that will generate more money for the company. The coding is outsourced, and the product managers oversee the outsourcers.

What's BOLD in... Health Care

Paperless medicine | Health-care organizations across the country are building electronic medical records and computerized physician order-entry systems so that physicians can immediately call up a patient's record, review past medical treatments, tests and prescriptions, and order new ones from their PDAs or office desktops or from laptops at the hospital.

Clinical evidence-based software | Hospitals are also building clinical evidence-based software into these systems so that doctors, faced with a particular diagnosis, can review best practices—and results—before they prescribe treatment. Some regions are also sharing patient data across hospitals, clinics, doctors' offices and pharmacies. The aim is to reduce medical errors and streamline care, thereby saving lives and money. *–Alison Bass*

The business analysts now work directly with employees in sales and underwriting to determine system requirements. The product designers also translate business needs into a technical design suitable for the company's new service-oriented architecture (earlier systems used a client/server model). Employees versed in Information Management System (a legacy database-management system), Cobol and DB2 were baptized in Java, .Net and strategies for vendor management.

As Matteson says, "The classic IT shop must look different a few years from now, or else it will become irrelevant to the business."

And he's translated those words into action. CIO

Senior Writer Meridith Levinson can be reached at *mlevinson@cio.com*.

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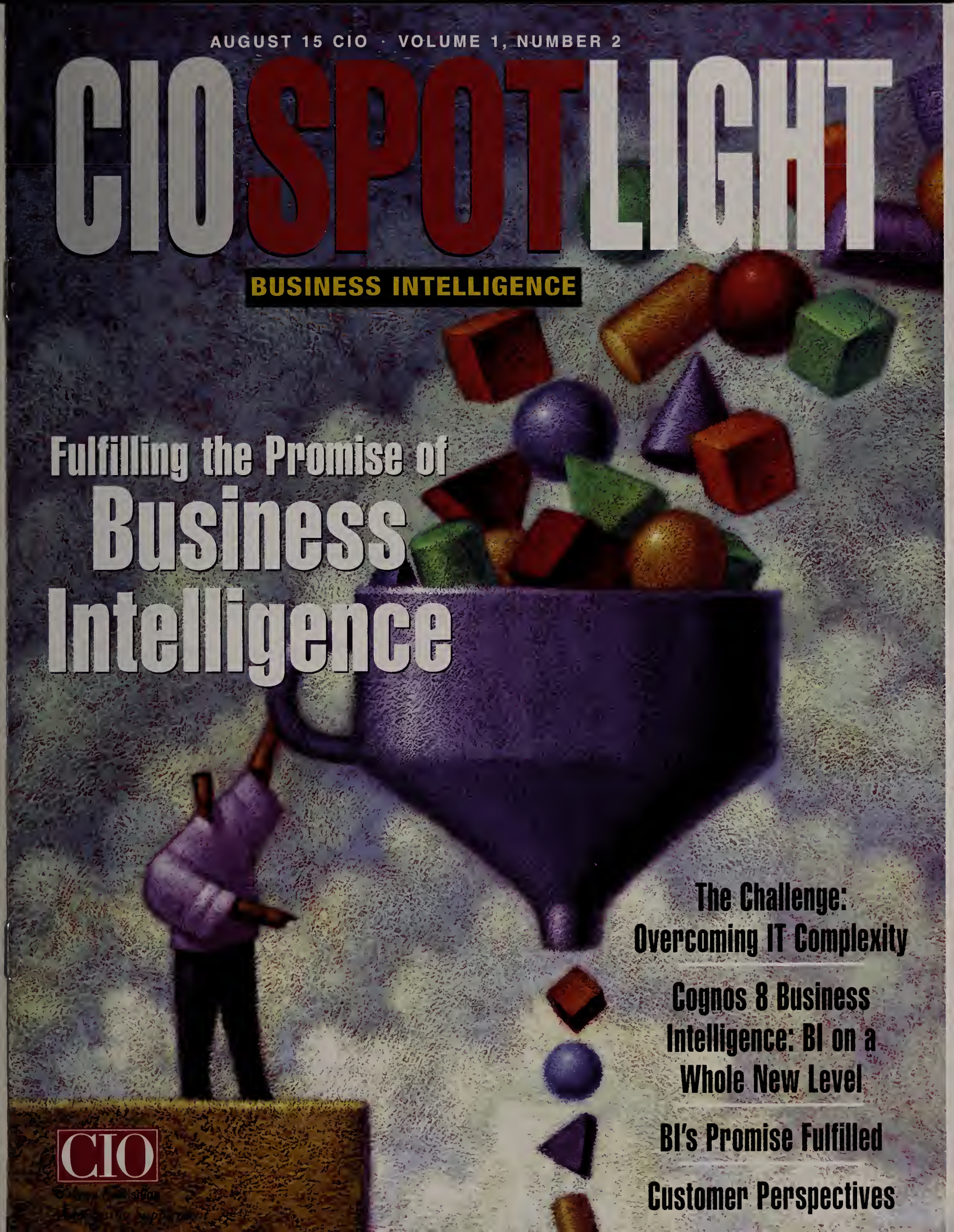

The Challenge: Overcoming IT Complexity

Cognos 8 Business Intelligence: BI on a Whole New Level

BI's Promise Fulfilled

Customer Perspectives

CIO

Fulfilling the Promise of Business Intelligence

THE CHALLENGE: OVERCOMING IT COMPLEXITY

"OUR GOAL IS TO NEVER have to say 'no' to a need for information," says Susan Dean, business intelligence manager at Regent Medical, a U.K.-based manufacturer and marketer of surgical gloves and barrier protection, and a long-time user of business intelligence (BI).

For many business users, though, this scenario can be the exception rather than the rule. Notwithstanding a host of successful examples (see "In Their Own Words" inside), most business users hear some version of "no" from their IT departments when it comes to getting the information they need to make decisions.

It's not for a lack of data. During the past four years, more than $47 billion of enterprise application software—enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM)—has been purchased worldwide.[1] These applications were designed to improve the efficiencies of operational processes, but not for enterprise-wide distribution of information to inform decisions. Some have complex user interfaces that are tied to the data source or require specific coding skills to access and analyze the data, which limits their usefulness to business users.

Companies can overcome this issue and leverage these applications by deploying business intelligence (BI) across them. BI gives business users the means to access and analyze corporate data to find answers, analyze trends, identify opportunities, and extract relevant information from vast and ever-growing amounts of data. With BI, business users can stay connected to what's happening in their organization with complete and consistent information.

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Arla Foods p.6
Kennametal Inc. p.8

Clear Benefits of BI

The benefits of BI have been clear and measurable: increased efficiency in information delivery at lower costs; visibility into performance for greater agility; and accurate, consistent information for better all-around business decisions. At Regent, for example, visibility into sales performance has increased reps' productivity. And IT has saved

600 person-hours and thousands of dollars through more efficient reporting.

Despite these benefits and growing user demand for it, BI has yet to find a home on the desktops of most business users. Access to BI is largely limited to a handful of highly skilled users within IT or to those business users who are close to the few, focused implementations. According to Gartner, most organizations' approaches appear to be fairly tactical: the majority are not tying BI to specific business objectives.[2] And so the promise of BI remains only partially fulfilled.

So what's holding business intelligence back?

The Challenge of Complexity

For the IT staffs charged with delivering BI, dealing with the complexity of their IT infrastructures is a daily reality. They face data scattered across the organization, captured by different systems and locked in silos; different platforms that don't always work with each other; users who need different views of the data and who work in different languages, currencies, and countries. Most companies have BI software from a variety of vendors, which makes consistent information—and true collaboration—difficult to achieve. It also results in high costs of maintenance and upgrades. External factors, such as SOX compliance, also place increased demands on IT to deliver "one version of the truth."

IN THEIR OWN WORDS

REGENT MEDICAL

Regent Medical is a leading global manufacturer and marketer of barrier protection for healthcare workers and patients.

"The BI group has become an important part of the Regent Medical team. We have gone from a support role to a partner with our sales organization. We have saved hundreds of person-hours a year since we have deployed the Cognos BI tools... over 600 man hours this year and thousands of dollars.

"THE ROI HAS BEEN HUGE:

- **Our sales force is now equipped with the necessary information to clearly see what is happening with a territory or region.**
- **We have rolled out several finance reports, which have helped our finance department to close within a week after month-end.**
- **We have helped to streamline business processes within our organization, due to the high level of access we have to information.**
- **We have incorporated outside competitive data and subjective data with our actual data to produce reports that allow us to view the business on many different levels."** —Susan Dean, BI Manager, Regent Medical

SOMEDAY, THE PROMISE OF BI WILL BE MET.

WELCOME TO SOMEDAY.

Business Intelligence made a promise: to make it simple for everyone to use information to make better decisions. But, given your complex IT infrastructure, the reality of getting a single BI standard in place across the company has been anything but simple. Until now.

Introducing Cognos 8 Business Intelligence, the one solution built to break down the barriers limiting BI's potential. With a complete Web Services-based SOA. A simple browser-based interface. A full range of BI capabilities — reporting, analysis, scorecarding, dashboarding and more — all in a single product and on a single architecture. And the BI foundation for companies demanding a simpler path to a complete performance management system.

It's everything BI promised to be. And now, it's here.
Learn more today at cognos.com/simple

COGNOS 8 BUSINESS INTELLIGENCE.

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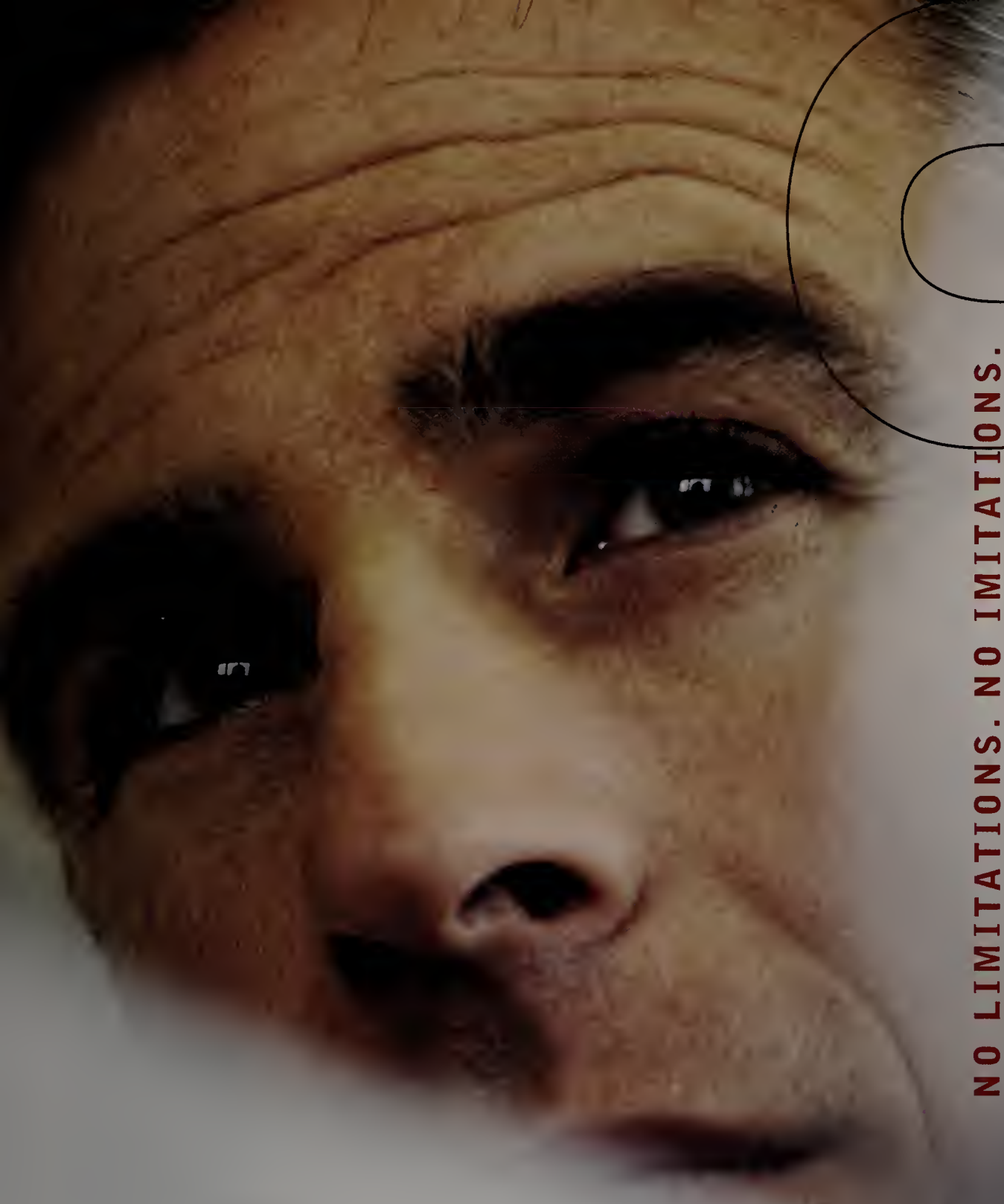

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COGNOS®

THE NEXT LEVEL OF PERFORMANCE™

CIOs pursuing a standardization agenda should look for products that are built to modern industry standards and use Web Services.

Dealing with complex IT infrastructures is simply the reality of doing business. The downside of this complexity, though, is that it's often a barrier to realizing the full potential of a business intelligence deployment. BI is essential to effective decision-making. Not having BI—or not having enough of it—holds users back from what they need to achieve.

The challenge for CIOs and their IT organizations is to increase access to BI and build expertise in it without adding complexity or increasing the workload for IT staffs.

The Desire for a BI Standard

The move toward BI standardization is a direct response to the need to manage complexity. In standardizing BI, a CIO can streamline management, deployment efforts and administration, and eliminate the need for duplicated or redundant environments. With a BI standard in place, a CIO can reduce costs and deliver a single version of the truth for collaborative decision-making.

The move to BI standardization is real: a recent Gartner survey found that most organizations want to standardize BI software across the enterprise.[3] An AMR Research poll reveals that 53% of the large companies surveyed have either completed or are in the early stages of standardization.[4] AMR Research concludes that over the next three years, companies will save between 20% and 40% of their EPM[5] operational costs through standardization.[6]

The Clear Choice for BI Standardization

This September[7], Cognos will introduce the clear choice for BI standardization: Cognos® 8 Business Intelligence. Cognos 8 Business Intelligence is a single product that will let a CIO leverage all corporate data and deliver the most comprehensive set of BI capabilities available, to all users, on one architecture. Finally, CIOs can standardize their BI to unlock its full potential, no matter how complex their infrastructure.

Welcome to YES.

COGNOS 8 BUSINESS INTELLIGENCE: BI ON A WHOLE NEW LEVEL

Most organizations already have some form of BI. So what makes Cognos 8 Business Intelligence different?

Cognos 8 Business Intelligence is a single BI product delivering the most complete range of BI capabilities, on a single architecture: the proven and powerful Web Services-based, services-oriented architecture that Cognos introduced in 2003 with Cognos ReportNet™. In addition, Cognos 8 BI takes every BI capability—dimensional and relational reporting (business, production), deep comparative analysis, active scorecards and dashboards, event lifecycle management, and data integration—to a whole new level of value. As a single product, it lets everyone across an organization standardize how they deliver and receive, query, analyze, and collaborate using business-critical information. Users can move seamlessly through information to find answers, analyze trends, identify opportunities, and make better decisions. Cognos 8 BI provides access to consistent information, which greatly improves the

IN THEIR OWN WORDS

ARLA FOODS

Based in Denmark, Arla Foods is a leading provider of dairy products with revenue of 6.5 billion euros, generated by 23,000 employees. The company also participated in the beta testing process for Cognos 8 Business Intelligence.

"The Cognos solution was chosen exclusively to cover all reporting and analysis needs within our SAP rollout program – a business transformation/globalization initiative that is one of the largest projects in Arla's history.

"The rollout program's overall goal is to reduce the number of systems, processes, and complexities within the Arla environment.

"THE BENEFITS:

- **Standardization. Reports and analysis had to be done in several systems and there was no global structure. Each business area was using its own tool.**
- **Reduction of demands on IT. Decreased training time: 75 percent of requests to the BI support group are now handled by the users themselves.**
- **Ease of use for all users in the organization.**
- **Anticipated benefits. The update time should be reduced and the distribution of reports to our customers should be a major step forward."**

—Michael Vølund, Team Manager, EAS Business Intelligence, Arla Foods

decision-making process and lets divisions and departments respond quickly and coherently to changing business conditions.

Deployed to all users, Cognos 8 Business Intelligence forms the foundation of a performance management system. CIOs can go even further by integrating Cognos 8 BI into their organizations' financial planning and forecasting system. The tight integration of business intelligence and planning capabilities provided by Cognos is core to a complete, closed-loop performance management system in which forecasts, metrics, actuals, reports, and underlying factors are seamlessly connected.

Built From the Ground Up

Cognos 8 Business Intelligence was built from the ground up to integrate with complex IT infrastructures. It delivers what CIOs need to standardize BI through three key elements:

- A single Web Services-based, services-oriented architecture (SOA) that increases agility and lowers TCO.
- Access to any combination of OLAP or relational data sources and centralized metadata that creates a single version of the truth, improves collaboration, and accelerates time to results.
- A familiar zero-footprint Web browser-based user interface that accelerates user adoption and increases information self-service.

1 Lower TCO and Increased Business Agility: The Benefits of a Web Services-based SOA

The sheer number of vendor-proprietary architectures resident in just about every company's IT infrastructure makes sharing data difficult and expensive. The current trend in software is to move away from vendor-proprietary architectures in favor of those based on open standards

that deliver well-defined business functionality using loosely-coupled, reusable components. These applications are more flexible and easier to integrate, delivering significant cost savings and increased business agility.

BI applications are no different. CIOs pursuing a standardization agenda should look for products that are built to modern industry standards and that use Web Services protocols such as XML, SOAP, WSDL, WRSP, and HTTP. These protocols are the building blocks of Cognos 8 Business Intelligence.

The Cognos 8 Business Intelligence single SOA and its API let IT easily integrate BI capabilities into existing IT assets and leverage existing infrastructure including security systems, OLAP sources and RDBMS, application servers, portals, and metadata.

THE PAYOFFS:

- BI capabilities can be turned on as needed to meet evolving business and user needs.
- CIOs can increase their return on assets because they don't need to rework portals, security, or metadata.
- Programmers customize, expose, or hide any BI capability using any programming language, leveraging IT knowledge.
- Reuse of ad hoc queries and analyses by professional authors reduces reporting backlog and delivers a shorter time to results.
- BI content is written once and deployed globally in any language.

THE BOTTOM LINE:

The Cognos 8 Business Intelligence architecture delivers increased business agility by letting IT address changing business conditions and strategies.

2 Collaborative Decision-Making: The Need for a Single Version of the Truth

Disparate data and applications are a major—and inevitable—source of complexity. Unless CIOs manage them effectively, they can hamper decision-making because data is siloed in proprietary systems. Users need to access data across these sources for a complete and consistent view of business issues. Otherwise, they lose time debating the validity of the numbers or act on incomplete information.

CIOs need BI that can access heterogeneous data and provide a centralized metadata model that applies consistent business rules, dimensions, and calculations to all data sources. Metadata models are often database-dependent, which limits their usefulness in dealing with the larger problem of data consistency and efficient collaboration. Users need a BI source that can provide a single view of multiple data sources that shields them from complex data structures.

Cognos 8 Business Intelligence provides access to any combination of OLAP or relational data and uses a centralized, common metadata model across all data sources, so users get a complete and consistent view of any business issue, regardless of how they view the information. No longer will decision-makers spend their time trying to reconcile inconsistent or contradictory information before deciding what to do.

THE PAYOFFS:

- All BI capabilities can be used to access, report on, and analyze any combination of data, regardless of its source or structure.
- Users can access all relevant data from one trusted place for a complete and consistent view of any business issue.
- Users are sheltered from the complexity of their data.

THE BOTTOM LINE:

With easy access to a single version of the truth, everyone can collaborate more effectively and spend less time debating numbers.

3 Higher Adoption: The Need for an Easy-to-Use Interface

The mix of legacy BI applications and user interfaces is a common barrier to widespread BI adoption. Business users are reluctant to adopt new interfaces because they add to the complexity of their daily activities. CIOs are reluctant to expand BI because there's no guarantee that people will use it. They need to deliver BI capabilities through an interface that users are comfortable with and use in their day-to-day activities.

Cognos 8 Business Intelligence is the first product to deliver all BI capabilities through an already familiar zero-footprint Web browser. This innovative new product lets users work with information in ways they never thought possible. They can view and interact with dimensionally aware reports, author business, production, and dashboard reports, perform ad hoc queries and comparative analyses, interact with scorecards, and create event workflows. Guided analysis lets users navigate to the information they need to resolve issues or make decisions more quickly. And built-in event management means business issues can be monitored and managed all the way through to resolution, further shortening time to action.

For IT, there are no end-user installs, plug-ins, or applet downloads to manage and maintain. Administration is also zero-footprint and can be centralized or distributed closer to the point of impact, and can provide service from any location.

These broad capabilities mean Cognos 8 Business Intelligence can streamline the entire deployment cycle by meeting the needs of all user types, from casual report consumers through to power users.

THE PAYOFFS:

- Users can get answers to resolve issues or make decisions more quickly.
- Centralized Web deployment enables broad user uptake.
- One BI product can meet the requirements of all business users, regardless of their level of expertise or area of responsibility.

THE BOTTOM LINE:

Everyone can view, report, analyze, and share information in a format that makes sense to them without needing to learn a new user interface or submit a request to IT. BI delivers greater value and becomes more widely adopted among business users, letting IT work on more strategic projects.

BI'S PROMISE FULFILLED

These three elements of Cognos 8 BI—a Web Services-based SOA, heterogeneous data access and centralized metadata, and a zero-footprint, browser-based interface—are key to delivering BI in a complex IT environment. And they are the necessary ingredients of BI standardization. Finally, CIOs can unlock the full potential of business intelligence to drive corporate performance to the next level.

To reserve your seat at the September 14 worldwide launch of Cognos 8 Business Intelligence, visit www.cognos.com/simple

IN THEIR OWN WORDS

KENNAMETAL INC.

Kennametal is a leading global supplier of tooling, engineered components and advanced materials consumed in production processes, with 14,000 employees and annual sales of over $2 billion.

"The visibility and insight provided by our BI solution is actionable and has allowed us to maneuver through the fluctuations and uncertainty of the global economy.

"We have reached our 'tipping point' ... as the Cognos BI solution becomes exposed, cemented and accepted as an integral part of our business strategy, the requests for more advanced BI solutions increases. No longer is the BI team 'pushing' the tool, our end users are demanding (pulling) more BI tools to know our customers better – for us BI is a defined source of global competitive advantage."

—Jon Amundson, Global Marketing Information Manager, Kennametal

1 Tom Friedman, Bill Hostmann, "The Cornerstones of BI – Payback and Risks," Gartner BI Summit 2005, March 2005.
2 B. Hostmann, H. Dresner, C. Graham, "BI Usage Patterns: How Do You Stack Up?" Gartner BI Summit 2005, March 2005.
3 Gartner Business Intelligence Multi Client Study, February 2005, Question 10, North American respondent results.
4 AMR Research, The Critical Questions to ask Before Embarking on BI Standardization, J. Coolidge, E. Meunier, May 2005.
5 Enterprise Performance Management
6 AMR Research, Enterprise Performance Management Decisions for 2005, J. Coolidge, January 2005.
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IN THIS STORY | The Charmer Sunbelt Group | The City of Phoenix | Reliance InfoComm

At Play in the Fields of the New

Technology, by itself, is never the whole answer to a business problem. It can, however, play a role in the drama of change.

BY CHRISTOPHER LINDQUIST

Charmer Sunbelt Group Corporate VP of IT Bill Healey created a centralized application for managing brand content.

City of Phoenix Acting CIO Kristine Sigfridson built a public safety wireless communication system based on new standards.

Reliance Infocomm CIO Ashish Chauhan built a wireless CDMA network for real-time performance.

In the climactic moments of Greek theater, the deus ex machina—the god in the machine—would descend in some contraption (the machine) to work out or eliminate the hero's difficulties.

But what worked for the Greek playwrights rarely works for CIOs. A new machine, a cutting-edge technology—that's almost never the answer to a CIO's or an organization's problems. But the intelligent use of bold technology can offer companies a chance to achieve significant competitive advantage or save significant money. The keys to using technology boldly and successfully, according to those honored in this year's CIO 100, are risk management, change management and gaining the trust of your users.

Content Management Becomes Sales Magic

Beer, wine, liquor. Since ancient times, not much has changed about how you make them. And the beverage distribution business reflects that. "Sales culture in the wine and spirits industry moves pretty slowly," says Bill Healey, corporate vice president for information technology at CIO 100 honoree The Charmer Sunbelt Group, a privately held, multistate wine and spirits distributor. But The Charmer Sunbelt Group's winning application demonstrates the company's desire to revolutionize the business, and to do it quickly.

Local autonomy is built into the wine and spirits business because distribution is highly regulated, and state liquor laws vary widely. As a result, sales and marketing efforts are localized by state, and silos of data grow up around state lines. For Charmer Sunbelt, this created redundancies and inefficiencies. The company turned to Healey to eliminate them. Healey was certain he could streamline processes by eliminating some of local distributors' cherished autonomy (though, he would argue, for benefits they would soon realize). It was, Healey thought, a risk worth taking.

Using Microsoft's Content Management System (CMS) and a SQL Server database, Healey's group bucked the industry culture by creating a centralized application that he says reduced headcount for managing brand content from 16 to four while simultaneously increasing the overall quality of the product materials. Instead of numerous regional content managers designing sales materials—often with varying outcomes—now a single person with a strong background in the spirits industry and a knack for creating compelling content can, leading a small team, put together sales and marketing materials for reuse throughout Charmer Sunbelt's operations. Visit the website for Premier Beverage Company of Florida, look up Alain Paret Syrah, and you'll get the same information ("medium- to full-bodied flavors with a deliciously rich, round, pure, sweet, ripe raspberry fruit concentration...") as you would from the Connecticut distributors site.

That description may be interesting to *Sideways* fans and potential customers just stopping by on the Web, but it's critical information for Charmer Sunbelt salespeople. An application called E-Pride (also based on the CMS content, collectively known as

"product libraries") gives the company's sales teams an advantage when putting together their proposals. Previously, salespeople would have to work their way through dozens of product line websites and a proprietary internal system, looking for material they could use to sell their products—from photos of bottles to wine reviews ("a naive domestic burgundy but admirably presumptuous") to pricing promotions. It was tedious, time-consuming work. E-Pride, however, lets salespeople visit one site and retrieve a wide range of product information and backup material—including real-time access to ever-changing sales promotions—quickly. It also gives them another competitive advantage: They can look up information about competing products. In the wine and spirits business, a distributor might be the official provider of Bacardi in Florida, while the same distributor's Arizona branch could be selling a different brand of rum. When information was siloed according to state, salespeople couldn't see information from other states. With E-Pride, all the data is available, helping the sales force know what they might be selling against.

This shift also helped the company's IT department, freeing staff from having to manually replicate data across different distributor websites. Now, if something needs to change, it happens once in the CMS and ripples automatically throughout the regions.

Healey says that during the initial rollout in Connecticut, even with all the benefits plain to see, "Use was a little timid," with salespeople feeling that "they'd been blitzkrieged." To encourage adoption of the new system, the manager of the product libraries, along with a group of true believers from the sales side, started meeting with skeptical users to explain the value proposition (better materials = better pitches = more sales) at training sessions and after-work dinners. In the process, Healey became a disciple of change management. "We learned that culture is embedded," he says.

"It takes a while for something as bold as this to take hold."

A Network Is Built Double-Quick

India's is an ancient culture, but new cultures are taking hold on the subcontinent—most recently, the culture of the cell phone. Looking to tap into the country's blossoming wireless communications market, startup cellular provider Reliance Infocomm needed to grow quickly if it were to compete with entrenched providers. And it decided to use technology as its prime agent for growth.

Reliance's first major technology gamble involved choosing CDMA-based networks over India's much more common GSM cellular technology standard (with GSM also much more widely used internationally than CDMA). But part of Reliance's business goal was to provide wireless data services, not just voice. And CDMA offered the company both more reliable data transmission and what it saw as a smoother transition to advanced data services down the road. The company's aggressiveness has paid off: Reliance has acquired more than 10 million subscribers already—including picking up 1 million subscribers last year in a 10-day period during a special promotion—making it grow from nonexistent to the largest private telecommunications provider in India in a mere nine months.

This dramatic growth created (no surprise here) dramatic challenges. Part of Reliance's strategy depended on spreading franchises throughout the country, including in places where network connectivity was limited or even nonexistent. And as its user base grew, the need for faster, more reliable connections between the franchisees and the central office increased. "The organization had to move from batch upload of data to real-time transaction processing," says Ashish Chauhan, Reliance's CIO. "The old framework was prone to delay and errors and was inflexible." For real-time performance, Reliance was going to need a faster network. So it turned to the only other option available—its own wireless CDMA network.

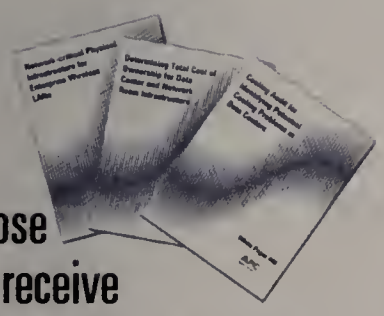
The choice was a serious risk. Reliance was already selling the data-carrying capabilities of its network to customers, but nothing like on the scale its own applications would require. If Reliance couldn't make its own network function adequately for the franchisees' CRM, point-of-sale and back-office data needs, the company would have wasted money, lost sales and probably suffered a damaged reputation. Some franchises might even have become economically unviable because of the increased costs of servicing customers over slower, older connections, including dial-up. Even success would cre-

What's BOLD in... Government

Creative staffing | Managing people is one of the tougher aspects of public-sector IT. You can't fire the deadwood and hire who you want. Bold public-sector CIOs are finding ways to rejigger their staffs, to reassign workers and to outsource the work that can't be completed with the skill set they've got. Public-sector unions and rules make this a veritable minefield.

New technology | Deploying new technology is a bold move for public-sector CIOs, who tend to be a conservative lot. If the technology fails, the failure is public and sometimes can have catastrophic, even life-threatening, results. Typically, public-sector CIOs are behind the IT curve. The bold take managed risks to bring in the new technology they need.

Creative budgeting | The bold public-sector CIOs find innovative ways to pay for and contract for services and applications. This typically means being a tough negotiator and a diplomat who can broker deals among groups and agencies that historically have been at odds with one another. *–Allan Holmes*



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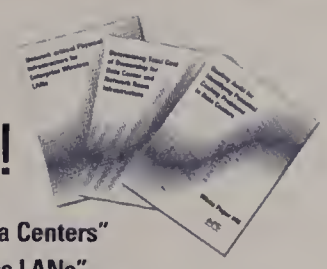

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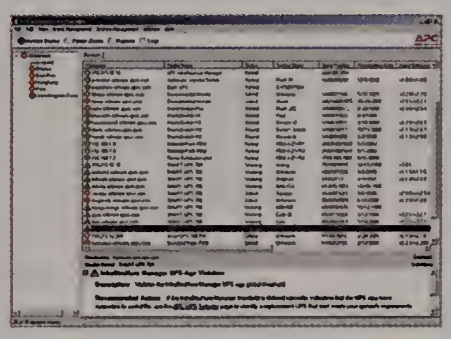

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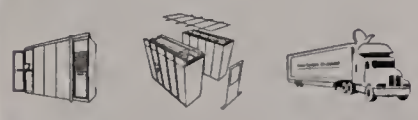

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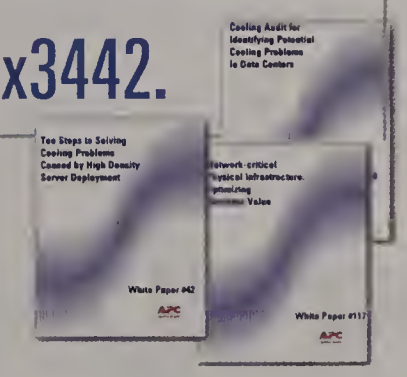

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ate challenges, as franchisees were already accustomed to the old batch-mode system and were skeptical about changing.

To reduce the danger, Reliance made several critical decisions. First, it decided to offer franchisees initially only a small piece of its overall customer processing suite—customer bill payment posting—while it continued to develop the rest of the technology behind the scenes. At the same time, Reliance was working on a backup plan that would allow for real-time updating via fiber optic links in 20 percent of its locations, with the remaining 80 percent allowed to use the old batch system until the new version became operational.

THE TOP 3 TECHNOLOGIES ENABLING BOLD INITIATIVES

1. Integration-enhancing systems and processes **86%**
2. Data access/warehousing **42%**
3. Portals **35%**

SOURCE: "The Bold 100 Honoree Survey"

And because Reliance's CRM application did not work effectively over the slow network, it created from scratch a stripped-down version with a different interface—called Simplify—that made more efficient use of bandwidth (though it also required additional training, Chauhan notes).

As the rollout progressed, Reliance started in just a handful of locations and created a new help desk to allow franchisees to ask questions about the new system 24/7. As more locations came online, the company implemented a point system that rated franchisees by geographical area on how much they used the new system, with scores publicized inside the company to allow managers to identify and work with reticent users. As a result, Chauhan says, within 90 days of implementation 100 percent of franchisees were using the new system.

"The project has also reduced the overall cost for enrolling a customer as well as servicing a customer," says Chauhan, "bringing down substantially the total support cost required for the customer lifecycle."

If not quite a deus ex machina, Reliance's CDMA network could accurately be called heroic.

A Safety Net with No Safety Net

The city of Phoenix had some wireless issues of its own. The city's public safety wireless communications system—encompassing police, fire department, EMT and other radio systems—was stretched to the limit by Phoenix's dramatic expansion. (The Phoenix area is one of the fastest growing regions in the United States, increasing in population nearly 60 percent between 1990 and 2004.)

But politics (*real* politics, not the wimpy office kind most of us endure), tightly watched budgets and the ever-changing will of the people tend to make cities cautious in their IT choices. When it came time to build the new public safety communications network, however, which includes public safety groups both inside Phoenix as well as in 17 surrounding towns (including nearby Mesa and Tempe), Phoenix made the bold decision to take a leadership position. And city officials say the resulting Phoenix Regional Wireless Network has become a model for what other cities in Arizona and the country will do with their own wireless systems.

The city decided back in 1996—long before the horror of 9/11 forced every local government to think in terms of tight cooperation between emergency groups—to go with the then-nascent Project 25 digital wireless emergency communications standards being promoted by the Association of Public Safety Communications Officials, the world's largest nonprofit professional organization dedicated to public safety communications. Project 25 promised both more efficient use of emergency wireless bandwidth and the ability to encrypt channels for privacy, and it works toward achieving interoperability among a variety of compatible equipment, including radios, scanners and repeaters. The ultimate success and exact definition of Project 25, however, was far from certain at the time. And to reap maximum rewards from the effort, Phoenix would need to get every existing local partnering emergency organization on board—hardly a small task given that the groups were sometimes skeptical about handing over such a critical piece of their operation to a central organization so that it could be built on unproven technology.

As a result, risk management, while always critical for business, was even more important for a government that serves and protects the citizenry and uses the citizenry's money to do so. "We don't have the money to fix the mistakes," says acting CIO Kristine Sigfridson. But the overloaded existing system, which posed the risk of emergency crews being unable to make radio communications during catastrophic events, made Phoenix feel that it needed to move decisively.

To smooth the process of technology vetting and adoption, the city's IT department led a coalition of agencies, including fire and police as well as a variety of technology providers. Unfortunately, the coalition had few if any best practices to guide it. Standards for such public safety networks are still developing. To reduce the risk involved with adopting the relatively unproven Project 25-compatible technology, the group sent representatives to other cities and towns that were already using similar wireless systems. They also spent considerable time quizzing technology providers and other experts on the state of the burgeoning Project 25 standards (at one point in 1997 even having a retired Arizona Supreme Court justice moderate a panel in which interested parties could ask vendors about Project 25 and their products).

Phoenix's success with this bold and critical initiative has also inspired them to contemplate other bold moves in the future. "I think that it built our confidence in building really, really big things," Sigfridson says. "We're far less inclined to be intimidated by taking on projects of this size."

Bold Conclusion

Three very different organizations. Three very different technologies. But one common theme: the willingness to boldly use IT tools to deliver outsized business benefit. The opportunities are out there, as our honorees prove. It's up to you to find them. CIO

Technology Editor Christopher Lindquist can be reached at *clindquist@cio.com*.

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IN THIS STORY | CUNA Mutual Group | Fulton County, Ga. | ING Insurance Americas | Questar Gas

BOLD on a Budget

Winning IT strategies and innovation don't have to cost an arm and a leg

BY BEN WORTHEN

Fulton County CIO Robert Taylor: The key is building relationships with vendors and making up what you can't pay for with sweat equity.

Questar Energy Services COO Shahab Saeed: "If someone said that they wanted something, we would say, Fine, show us why you need it."

ING Insurance Americas CIO Dave Gutierrez: "Not everything requires resources. If you're too facile with resources, you lose some of that entrepreneurial spirit."

Not every organization can afford to spend millions on cutting-edge technology. The challenge for these companies is to find a way to be bold without breaking the bank. Methods employed by our CIO Bold 100 honorees range from the practical (such as limiting the scope of major projects) to the more risky (including relying on beta versions of software) to the outright counterintuitive (developing prototypes with no budget). Each strategy comes with a set of trade-offs, but for our bold CIOs, managing the risks was better than spending the extra dollar.

Continued on page 74

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Fulton County, Ga.

Goal: Make the county one of the most technologically advanced in the country.
Risk: Initiative relies on emerging vendors and beta versions of software.
Mitigation strategy: Testing, testing and more testing.

When Robert Taylor was named CIO of Fulton County, the IT department was so behind the times that the county shelled out money for 1,200 MindSpring accounts rather than support a corporate e-mail system. "My charge was to drag the county kicking and screaming into the 1990s," says Taylor.

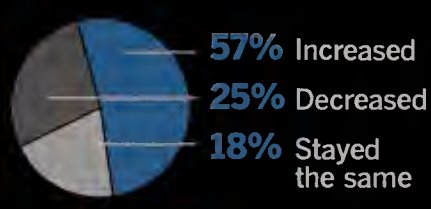
And it was already August 2000.

Since then, Taylor has transformed Fulton County, which includes the city of Atlanta, into one of America's most technologically sophisticated local government organizations despite an annual budget of just $24 million. The key, he says, is building relationships with vendors, working hard to find price points and payment plans that work for both parties, and making up what you can't pay for with sweat equity.

For instance, instead of spending $300,000 on a security product from Cisco, Taylor agreed to beta test a new Microsoft product. In another instance, he agreed to help a startup called CloudShield develop the final stages of its software in exchange for a discounted price. These not-ready-for-prime-time products are always tested in Fulton's lab, then piloted in the IT department and a few other friendly departments before Taylor rolls them out to all 42 county departments. Because his team always comes up with improvements, Taylor compares the process to buying the frame for a house, but putting up the sheetrock and painting it yourself.

THE PURSE STRINGS LOOSEN

Has your IT budget increased, decreased or stayed the same compared to last year?



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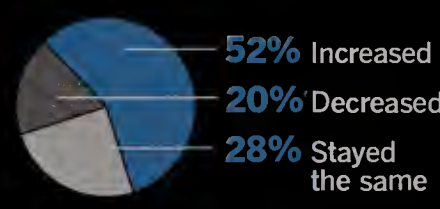

SOURCE: "The Bold 100 Honoree Survey"

This approach doesn't work for every potential partner, says Russell Mobley, Fulton's interim deputy director of IT over applications. "Some vendors say, 'We're a tier-one company, so we won't negotiate,'" he says. "That's fine. There are tier twos and threes that have pretty good mousetraps." And those companies may be willing.

Taylor says that no cost is too small to cut. When this reporter followed Taylor's instructions to call him at his office, the CIO joked, "One way we save money is to have the other person initiate all our phone calls."

"Vendors say, 'We're a tier-one company, so we won't negotiate.' That's fine. There are tier twos and threes that have good mousetraps."

–FULTON COUNTY I.T.'S RUSSELL MOBLEY

Questar Gas

Goal: Replace an antiquated customer information system (CIS).
Risk: In the utility industry, projects such as these often take too long and go over budget.
Mitigation strategy: Assembled a top-notch team that spent a year and a half determining the requirements for the project and negotiating with the vendor.

In 2001, Shahab Saeed, then the new VP of IT at Questar Gas, walked into his CEO's office and announced that the company's legacy CIS was a time bomb. It was decades old, written in languages that schools no longer taught and had enough bolt-ons to make Frankenstein's face look smooth. The CEO was concerned (rightly) that projects like that tend to go seriously over budget. But Saeed convinced him that he could pull it off by putting the right people on the team. And he did, completing it two months early and $10 million below budget.

The key to Questar's success was meticulous planning. Before making any investments, Saeed and his team spent a year studying past industry CIS failures and used these lessons to develop a set of requirements for Questar. For example, the team found that most utility companies tried to convert too much data from the old system into the new one. So when the business said it wanted to move three years' worth of historical data, the team pushed back, asking for proof that all that information was necessary. A check of the numbers revealed that customer data older than 13 months was accessed in only 1 percent of inquiries. Compromising, Saeed decided to transfer 13 months' worth of data.

"Every decision was based on facts," he says. "If someone said that they wanted something, we would say, Fine, show us why you need it."

Questar evaluated 10 vendors to find the one whose product best matched its requirements and then spent six months negotiating the contract, making sure it contained one specific clause: Questar would not hire any contractors. The people working on the project would have to work for either Questar or the vendor. "We wanted people who had skin in the game," says Saeed.

Saeed was promoted to president and CEO of Consonus (a Questar subsidiary) and VP and COO of Questar Energy Services and Questar InfoComm (another company subsidiary) in February 2004. "I told my boss that I would accept only if I could remain the project sponsor," he says.

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CUNA Mutual Group

Goal: Reduce the cost of IT for the Members Financial Services business.
Risk: Replacing a system that was working.
Mitigation strategy: Did not sunset the current CRM system until the custom system was ready for production.

When CUNA Mutual Group Vice President of Business Technology Sean Fallon reviewed the IT budget for the company's struggling Members Financial Services (MFS) division in early 2003, one line item stood out: A nationally deployed Siebel CRM system accounted for 75 percent of the business's IT expenses. To a certain extent, that was expected. The business's focus is to provide financial advice to credit-union customers, the sort of people-focused task for which CRM systems are designed. Still, the business couldn't maintain the Siebel licensing and maintenance costs, and turn around its financials. So four programmers were appointed to build a CRM system specifically for the MFS business. The new system would require an initial investment of just under $1 million, but over the long run, it would be dramatically cheaper than Siebel's.

Fallon says that the project worked for two reasons. First, the executive team understood that having spent a lot of money on the Siebel system wasn't justification for continuing to use it if another option could deliver a better total cost of ownership and ROI. Second, the team limited the scope of the project to the functions that the MFS business needed immediately and didn't allow the developers to get bogged down trying to write functionalities that may be needed down the road. In this way, the development team avoided such details as how the customer contacted the office or what other services he has with the company. All in all, the homegrown CRM system has half as many fields as the Siebel system, which makes it easier to use and cheaper to maintain.

"Most projects have an elegant vision," says CUNA Mutual's CTO Rick Roy. "But execution is where it really happens or not. By doing it incrementally, we managed to turn a leap of faith into something real very quickly."

ING Insurance Americas

Goal: Develop one data model warehouse for six countries.
Risk: No budget meant stealing time and resources from other projects.
Mitigation strategy: Reused code from other projects, and staff worked overtime—willingly.

One might not expect to see an organization with a $450 million annual IT budget in an article about being budget-conscious. But ING Insurance Americas CIO David Gutierrez has built an organizational culture designed specifically to counteract the entrepreneurial malaise that can come from having a large nest egg to fall back on. When Gutierrez and his team decided to build a data warehouse system that could integrate with the legacy back-end systems in all six countries where ING Insurance Americas operates (Canada, the United States, Mexico, Brazil, Peru, Chile), he challenged his IT team to develop the prototype architecture—a $2 million project—without any dedicated resources. It was either that or wait a year to try to get the funding in his next budget.

One of the first questions that people in IT ask when they are assigned to a project is, What resources do I have? says Gutierrez, "but not everything requires resources. It's like the inventor who stays up all night working in his garage. If you have a deep belief in something, you work on it. If you are too facile with resources, you lose some of that entrepreneurial spirit."

Programmers were able to develop the architecture that eventually became the foundation of the data warehouse system by including parts of the development in other projects and then reusing them. The staff also put in overtime to work on the project. Once Gutierrez could show the rest of ING's executives the finished architecture, he was able to secure funding for the full project. "There are many good ideas waiting in the wings for funding," Gutierrez says. "We don't want ideas to go away just because a project isn't funded, so we encourage people to do it with whatever they have." CIO

Senior Writer Ben Worthen can be reached via e-mail at *bworthen@cio.com*.

What's BOLD in... Finance

Infrastructure modernization | Revamping a legacy IT infrastructure enables bold financial companies to increase efficiency and become more flexible, allowing them to adapt quickly to customer demand for new products and services and to more easily expand operations globally.

Retooled business processes | Insurers, banks, brokerages and the intermediaries that move money for consumers and investors are blowing apart old ways of doing business, from how they process customer transactions to how internal software applications are developed. *–Elana Varon*

The HONOREES

These bold companies and individuals earned their CIO 100 awards for their willingness to assume big risks in the pursuit of big rewards

Automotive Manufacturing

DELPHI
Troy, Mich.
www.delphi.com
Diversified by investing in products in non-automotive markets. For IT, that meant supporting a new fast-to-market environment, integrating new acquisitions, providing new levels of security per industry and supporting a complete organizational transformation.
Bette Walker, CIO and VP
J.T. Battenberg, Chairman and CEO
FY04 revenue: $28.7 billion
Employees: 185,000

GENERAL MOTORS
Detroit
www.gm.com
Developing common processes to design and build standardized products across the globe while maintaining quality, consistency and efficiency, and achieving cost savings.
Kirk Gutmann, Information Officer of Global Manufacturing and Quality
G. Richard Wagoner, Chairman and CEO
FY04 revenue: $193 billion
Employees: 324,000

TOYOTA MOTOR SALES, U.S.A.
Torrance, Calif.
www.toyota.com
The launch of a new product required a new distribution model supported by existing systems and infrastructure, and a repositioning of 50% of the IS workforce.
Barbra Cooper, CIO and Group VP
Yukitoshi Funo, President and CEO
FY04 revenue: NA
Employees: 5,900

Business/Consumer Services

STAPLES
Framingham, Mass.
www.staples.com
A new emphasis on wholesaling Staples-branded products required rapid implementation of product lifecycle management software and building out infrastructure to enhance procurement capabilities.
Scott Floeck, CIO
Ronald Sargent, CEO
FY04 revenue: $14.4 billion
Employees: 65,000

VISTAPRINT
Lexington, Mass.
www.vistaprint.com
Overhauled its business model by automating graphic design, thereby creating a rules-based system that enabled shorter lead times and lower prices.
Alex Schowtka, COO and Executive VP
Robert Keane, President and CEO
FY04 revenue: $71.8 million
Employees: 400

Business Services/ Consulting (noncomputer-related)

CARLSON MARKETING GROUP
Plymouth, Minn.
www.carlsonmarketing.com
Responded to downward price pressures by shifting business model from offering individual custom solutions to a process-manufacturing approach that configures a core set of services, thereby leveraging reusable functions.
Scott Heintzeman, CIO
Curtis Nelson, CEO
FY04 revenue: $2.76 billion
Employees: 3,000

MALLESONS STEPHEN JAQUES
Sydney, Australia
www.mallesons.com
Responding to client demand for greater transparency in the delivery of legal services, this firm standardized and homogenized its legal and business processes. That's radical in a traditionally individualistic industry.
Gerard Neiditsch, Executive Director of Business Integration and Technology
Robert Milliner, Chief Executive Partner
FY04 revenue: NA
Employees: 2,100

Communications

BT GROUP
London
www.bt.com
Moved from telecom service provider to systems integrator. This meant building one platform that could support multiple solutions and making all customer interactions self-service on the Web in real-time.
Al-Noor Ramji, CIO
Ben Verwaayen, CEO
FY04 revenue: £18.5 billion
Employees: 99,900

NBC UNIVERSAL
New York City
www.nbcuni.com
Committed to "wing-to-wing digital process," NBC is the first network to produce news shows fully from a state-of-the-art digital media production facility. Also built digital desktop systems so that content can be reviewed in near-real-time.
John Eck, President of IT and Operations
Bob Wright, Vice Chairman and Executive Officer of GE; Chairman and CEO of NBC
FY04 revenue: $12.9 billion
Employees: 16,000

RELIANCE INFOCOMM
New Mumbai, India
www.relianceinfo.com
Provided franchisees with real-time system accessibility and CRM applications at 2,000 locations in more than a thousand cities across India, despite the fact that wireless technology in India was heretofore immature.
Ashish Kumar Chauhan, CIO
K.P. Nanavaty, CEO of Wireless Business
FY04 revenue: $1 billion
Employees: 25,000

VERIZON COMMUNICATIONS
New York City
www.verizon.com
Transforming its network from a copper-based switched infrastructure to a fiber-optic-based packet infrastructure, and laying the "last mile" of fiber to customers' homes

open gatefold →

Get to Know the CIO 100

Every year, we list the CIO 100 honorees on the Web as well as in print. But this year, we've gone one bold step further online by compiling the **CIO 100 Microsite**. Which of the honorees share your company size? Sort the winners to come up with this and other answers you're looking for. To access the microsite, go to **www.cio.com/081505**.

CIO.com

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AMOUNT: 100X FASTER QUERY RESPONSE

Using the IQ data analytics engine from Sybase,® Nielsen Media Research enables customers to get real-time access to audience viewing habits through:

- ☑ **800% faster data loads** for increased productivity during maintenance windows
- ☑ **a secure, Web-based interface** that's accessible 24 hours a day from any location
- ☑ **70% data compression ratio** for significant hard-cost storage savings

When viewing trends change in the ultra-competitive broadcast industry, Nielsen Media Research and their customers know it instantly. Because they have an information edge that comes from Sybase Information Management solutions. Powerful software that enables their clients to analyze more data in more ways. Up to 100x faster. And helps Nielsen provide better service at a lower cost. It's an edge that only we can deliver. And it's why more global companies are tuning-in to Sybase every day. www.sybase.com/infoedge1

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SYBASE®

and office buildings to support new products.
Shaygan Kheradpir, CIO
Lawrence T. Babbio Jr., Vice Chairman and President
FY04 revenue: $38.55 billion
Employees: 140,000

Construction/Architecture/Engineering

LITTLE DIVERSIFIED ARCHITECTURAL CONSULTING
Charlotte, N.C.
www.littleonline.com
Migrated from 2-D drawing technology for design, construction and facilities management to a set of processes and technologies that create a data model for an entire building that can be viewed graphically in 3-D and exported to other applications such as ERP systems.
Chris France, CIO
Phil Kuttner, CEO
FY04 revenue: $41 million
Employees: 280

NATIONAL GYPSUM
Charlotte, N.C.
www.nationalgypsum.com
Along with committing to total supply chain visibility and creating a customizable portal, hired sales and customer contact people right into IT as customer advocates and subject matter experts.
William Parmelee, CFO
Thomas C. Nelson, Chairman, President and CEO
FY04 revenue: $1 billion +
Employees: 2,600

PULTE HOMES
Bloomfield Hills, Mich.
www.pulte.com
Developed a set of tools in-house that incorporates nearly all of the basic homebuilding processes (in the absence of third-party products specific to the construction industry) to simplify business processes during a period of rapid growth.
Jerry R. Batt, CIO and VP
Richard J. Dugas Jr., President and CEO
FY04 revenue: $11.7 billion
Employees: 13,000

Education

EDUCATIONAL TESTING SERVICE
Princeton, N.J.
www.ets.org
Launching a large-scale assessment over the Internet in real-time and increasing the number of international test centers from 110 to 3,000 so that up to 20,000 students can simultaneously test online.
Scott Weaver, CIO and VP
Kurt Landgraf, President and CEO
FY04 revenue: $825 million
Employees: 2,500

THE GEORGE WASHINGTON UNIVERSITY
Washington, D.C.
www.gwu.edu
Reexamined its recovery plans in light of 9/11 and chose to emphasize business continuity, developing and maintaining high-availability services that could be brought back online in hours instead of planning for a major recovery that would require days or weeks.
David Swartz, CIO
Stephen Joel Trachtenberg, President
FY04 revenue: $630 million
Employees: 8,000

JEFFCO PUBLIC SCHOOLS
Golden, Colo.
jeffcoweb.jeffco.k12.co.us
In a time of shrinking budgets and other financial constraints all too familiar in the world of public education, Jefferson County reinvented its IT department using ITIL, a project management office and other governance tools.
Marcia Bohannon, CIO
Dr. Cynthia Stevenson, Superintendent
FY04 revenue: $516 million
Employees: 12,068

NEUMONT UNIVERSITY
Salt Lake City
www.neumont.edu
Trying to reinvent computer science education and thereby address the IT labor shortage by educating software developers about the role of IT in business, and teaching teamwork and communication skills.
Marlow Einelund, CIO and cofounder
Scott McKinley, CEO and cofounder
FY04 revenue: $3.7 million
Employees: 50

NORTHEASTERN UNIVERSITY
Boston
www.northeastern.edu
Confronted the heterogeneous nature of a university with authentication and identity management technologies, creating a Web-based virtual computing environment. Almost everything will be accessible via a portal, no matter where anyone is physically located, on whatever platform is available.
Robert P. Weir, VP of IS
Dr. Richard M. Freeland, President
FY04 revenue: $578 million
Employees: 3,400

TEMPLE UNIVERSITY
Philadelphia
www.temple.edu
Developing a $17 million, 75,000-square-foot comprehensive student teaching, education, collaboration and help center.
Tim O'Rourke, VP for Computer and Information Services
David Adamany, President
FY04 revenue: $831.5 million
Employees: 45,000

UNIVERSITY OF NOTRE DAME
Notre Dame, Ind.
www.nd.edu
Simultaneously implemented a major infrastructure upgrade (including a new data center and Wi-Fi initiative) while replacing mainframe-based legacy systems with a distributed system.
Gordon Wishon, CIO, Associate VP and Associate Provost
Rev. Edward A. Malloy, President
FY04 revenue: NA
Employees: 4,070

Energy/Utilities

ATMOS ENERGY
Dallas
www.atmosenergy.com
A growth strategy (including acquisitions that double the customer base) is supported by an integration effort with a hard deadline (including testing the partner vendor's code in-house before rolling it out).
Leslie H. Duncan, CIO and Corporate VP
Robert W. Best, Chairman, President and CEO
FY04 revenue: $2.92 billion
Employees: 4,399

CHESAPEAKE UTILITIES
Dover, Del.
www.chpk.com
Pursuing a growth strategy through investments in related businesses, the utility's IT department had to be transformed from a cost center to a leadership center, and from an organization solving technology problems to one solving business problems.
Jeff Sylvester, Director of Business Analysis and Systems
John R. Schimkaitis, CEO
FY04 revenue: $178 million
Employees: 450

CONSTELLATION ENERGY
Baltimore
www.constellation.com
Went from regional to national energy merchant. In the process, it transformed the organization's culture by centralizing IT governance and systems.
Beth Perlman, CIO and Senior VP
Mayo A. Shattuck III, Chairman, President and CEO
FY04 revenue: $12.55 billion
Employees: 9,594

KEY ENERGY SERVICES
Midland, Texas
www.keyenergy.com
Brought technology to the oil fields. Introduced PCs for the first time four years ago that are now capable of monitoring equipment, rig operations and activity, and providing this data to the enterprise in real-time.
John Hood, CIO and VP of IT
Richard Alario, CEO
FY04 revenue: $1 billion
Employees: 8,000

QUESTAR GAS
Salt Lake City
www.questargas.com
Pulled the plug on its mainframe-based legacy customer information and billing system by using in-house IT resources on project management, data conversion and integration.
Shahab Saeed, VP of IT (at time of project)
Alan Allred, President and CEO
FY04 revenue: $764 million
Employees: 1,700

SOUTHERN COMPANY
Atlanta
www.southerncompany.com
Automated service response—scheduling, dispatching and resource management—under adverse conditions (hurricanes) in order to keep the lights on. Attacked customer dissatisfaction by implementing natural voice recognition technology to replace Touch-Tone system.
Becky Blalock, Senior VP of IT
David Ratcliffe, Chairman, President and CEO
FY04 revenue: $11.9 billion
Employees: 22,000

XCEL ENERGY
Minneapolis
www.xcelenergy.com
Essentially placed IT in charge of R&D. Launched more than 20 pilot projects with five partner companies. These programs are expected to produce a 50% premium over the company's traditional IT portfolio ROI.
Raymond E. Gogel, CIO and VP
Wayne H. Brunetti, CEO
FY04 revenue: $8.3 billion
Employees: 10,650

Entertainment/Travel/Media

CHURCHILL DOWNS
Louisville, Ky.
www.churchilldownsincorporated.com
Faced with increasing competition from off-track betting and Internet gaming options, the track needed to identify its most profitable customers. The solution was the racing

world's most comprehensive CRM system.
Atique Shah, VP of CRM and Technology Solutions
Thomas H. Meeker, President and CEO
FY04 revenue: $463.1 million
Employees: 1,200

DEX MEDIA
Englewood, Colo.
www.*dexmedia.com*
After being spun off from Qwest, Dex transformed its business model from that of a directory publisher to a broker in the searchable content market.
Helen Cousins, CIO and Senior VP
George Burnett, President, CEO and Director
FY04 revenue: $1.65 billion
Employees: 2,800

DISCOVERY COMMUNICATIONS
Silver Spring, Md.
www.*discovery.com*
Embarking on an effort to digitize all its content, Discovery merged its IS and media services (production) organizations. This is alignment with a vengeance.
Diane Duggan, Executive VP of Technology and Media Services
Judith McHale, President and CEO
FY04 revenue: $2.3 billion +
Employees: 5,344

NFL FILMS
Mt. Laurel, N.J.
www.*nflfilms.com*
Faced with a hard deadline for launching a new network, IT provided the tools to allow more than 100 producers to search, play back and catalog raw video clips on their PCs to quickly build program content.
David W. Franza, CIO
Steve Bornstein, CEO
FY04 revenue: NA
Employees: 370

Finance/Banking/ Investment

COMPUCREDIT
Atlanta
www.*compucredit.com*
Determined that incremental improvement would not meet future business needs and launched an effort to "do more, faster," enabled by business-process-driven software development, Web services, a service-oriented architecture and business intelligence tools.
Guido Sacchi, CIO and Executive Director of Shared Services
Rich House, President
FY04 revenue: $576 million
Employees: 2,755

HVB GROUP NEW YORK
New York City
www.*hvb.com*
Needed to upgrade processes but could not replace legacy systems. Goal was to adopt a "single point of capture" concept so that trades would have to be inputted only once. Found a vendor with no experience in finance and an unproven product, and bet the ranch.
David Dart, CIO and Managing Director
Christopher Wrenn, COO and Managing Director
FY04 revenue: $230 million
Employees: 316

ING INSURANCE AMERICAS
Atlanta
www.*ing.com*
Shifted its information environment from one of segregation to one with a series of common information hubs. An enterprisewide architecture effort was complicated by the need for ongoing regulatory compliance.
David Gutierrez, CIO of ING Americas and CIO of Latin America
Fred Hubbell, Chairman of Insurance Americas
FY04 revenue: $1.67 billion
Employees: 26,000

MONEYGRAM INTERNATIONAL
St. Louis Park, Minn.
www.*moneygram.com*
In order to gain a permanent competitive advantage by being able to send deposits (in any currency) over the Internet to any bank in the world, MoneyGram had to radically change its system architecture and build a new security process.
David A. Albright, CIO and VP
Philip W. Milne, President and CEO
FY04 revenue: $826.5 million
Employees: 1,600

NEW YORK MERCANTILE EXCHANGE
New York City
www.nymex.com
With the goal of globalizing, set up an exchange in Dublin, Ireland, in just three weeks. Now has SWAT teams opening up exchanges around the world. Starting with seven mainframes and operating systems, has standardized and rewritten every application using a service-oriented architecture.
Samuel H. Gaer, CIO
Dr. James E. Newsome, President
FY04 revenue: $237 million
Employees: 499

PERSHING
Jersey City, N.J.
www.*pershing.com*
Committed to organizational change through Global CMM certification and a formal ITIL-based incident and problem management process, standardizing IT methodologies across the organization.
Suresh Kumar, CIO
Richard F. Brueckner, CEO
FY04 revenue: $1 billion
Employees: 4,300

PROCARD
Golden, Colo.
www.*procard.com*
Developed a back-end Web services product for a competitor and decided that the potential revenue from the product outweighed the possibility of improving a competitor's performance.
Ian Hill, COO (formerly CIO)
Bruce Baude, President and CEO
FY04 revenue: $25 million
Employees: 150

ROYAL BANK OF CANADA
Toronto
www.*rbc.com*
Combined business and IT strategy by consolidating five global lines of business into three geographically based business units, and merging IT and operational groups into one new, aligned structure.
Martin Lippert, Vice Chairman and Group Head of Global Technology and Operations
Gord Nixon, President and CEO
FY04 revenue: NA
Employees: 71,876

SOCIETY OF WORLDWIDE INTERBANK FINANCIAL TELECOMMUNICATIONS
La Hulpe, Belgium
www.*swift.com*
Assumed huge financial and operational risk by migrating to an IP network from older technologies in a "bet the company" project requiring extensive collaboration with end users, all of whom are paying customers.
Joseph Eng, CIO
Leonard H. Schrank, CEO
FY04 revenue: 577 million euros
Employees: 1,708

TIAA-CREF
New York City
www.*tiaa-cref.org*
Facing increasing competitive pressure, completely revamped its retirement plan platform with an open architecture. Nearly 10% of the total employee base is dedicated to developing and testing solutions.
Susan Kozik, CTO and Executive VP
Herbert Allison, Chairman, President and CEO
FY04 revenue: $1.4 billion
Employees: 5,500

WELLS FARGO WHOLESALE INTERNET AND TREASURY SOLUTIONS
San Francisco
www.*wellsfargo.com*
Committed to online banking by stopping PC-based services and shifting business to an Internet portal that now houses more than 45 integrated applications, providing a single desktop that can be personalized to the user.
Danny Peltz, Executive VP of Wholesale Internet and Treasury Solutions
Dick Kovacevich, Chairman and CEO
FY04 revenue: $436 billion (assets)
Employees: 150,000

Government

BUREAU OF LAND MANAGEMENT
Washington, D.C.
www.*blm.gov*
In pursuit of IT-business alignment, embraced transparency to an extent rarely found in a public agency, opening up its IT operation to scrutiny, including budgets for specific projects, performance metrics, progress toward IT management goals and work plans for next year.
Ronnie Levine, CIO and Assistant Director of Information Resources Management
FY04 revenue: $1.7 billion
Employees: 10,000

CITY OF CHANDLER
Chandler, Ariz.
www.*chandleraz.gov*
Responding to IT's reputation for delivering projects late and over budget, created a project management office. Project delivery is now on time and on budget 81% of the time, which is double the industry average.
Marilyn Delmont, CIO
W. Mark Pentz, City Manager
FY04 revenue: $636.5 million
Employees: 1,541

CITY OF PHOENIX
Phoenix
www.*phoenix.gov*
Responded to post-9/11 goal of creating interoperable communications networks by devoting more than one-third of IT budget to the Phoenix Regional Wireless Network, which provides a metropolitan wide-area radio network. Implemented a standards-based open architecture, replacing the city's radio infrastructure.
Kristine Sigfridson, Acting CIO
Frank Fairbanks, City Manager
FY04 revenue: NA
Employees: 14,464

DELAWARE DEPARTMENT OF TECHNOLOGY AND INFORMATION
Dover, Del.
www.*state.de.us/dti*
To improve the state's information and technology management, made CIO a cabinet-level position and placed IT employees outside traditional civil service pay plans and rules, thereby running IT like a business.

Thomas Jarrett, CIO and Secretary of the Department of Technology and Information
FY04 revenue: $52 million
Employees: 196

FULTON COUNTY GEORGIA GOVERNMENT

Atlanta
www.myfultoncountyga.us
Simultaneously implementing a broad number of initiatives, including modernization, infrastructure consolidation and partnered application development.
Robert E. Taylor, CIO and Director of IT
Thomas Andrews, County Manager
FY04 revenue: $1.1 billion
Employees: 7,000

MINISTRY OF COMMUNITY DEVELOPMENT, YOUTH AND SPORTS

Singapore
www.mcys.gov.sg
A single, integrated case management system for child and family protection and the management of juvenile delinquency replaced 10 disparate systems as Singapore invested heavily in e-government IT.
Lim Teck Soon, CIO
Niam Chiang Meng, Permanent Secretary
FY04 revenue: $969 million
Employees: 890

MINISTRY OF PUBLIC FUNCTION, MEXICO

Mexico City
www.funcionpublica.gob.mx
Attempting to bridge the digital divide, this e-government initiative, with 7,200 eMexico Digital Centers, services more than 40% of the Mexican population.
Abraham Sotelo Nava, Head of the Unit for Electronic Government and IT Policy
Eduardo Romero Ramos, Public Function Minister
FY04 revenue: $113.04 million
Employees: 1,200

RESOURCES INFORMATION TECHNOLOGY PROGRAM OFFICE

Falls Church, Va.
https://ritpo.satx.disa.mil
Replaced paper-based records and legacy systems with an interface allowing more than 40,000 direct care providers across the globe to access the health records of more than 9 million beneficiaries. Developed and deployed in less than 18 months.
Michael Snyder, Principal Deputy Program Manager
Capt. A. Ben Long, Program Manager
FY04 revenue: $102 million
Employees: 98

UNITED STATES AIR FORCE CIO OFFICE

Washington, D.C.
www.cio.hq.af.mil
Used instant messaging in a secure environment to manage the military supply chain in the run-up to the Iraqi war.
John M. Gilligan, Air Force CIO
Peter B. Teets, Undersecretary of the Air Force
FY04 revenue: $110 billion
Employees: 370,000 men and women on active duty; 180,000 members of the Air National Guard and the Air Force Reserve; 160,000 civilians

UNITED STATES DEPARTMENT OF THE ARMY STAFF'S CHIEF INFORMATION OFFICER/G-6

Washington, D.C.
www.army.mil/ciog6
Replaced legacy portal with new, scalable Army Knowledge Online portal (the largest intranet in the world with almost 1.7 million users) in three and a half months. Emphasizes enterprise knowledge management.
Lt. Gen. Steven W. Boutelle, CIO/G-6
Col. James Lien, Chief of Staff, CIO/G-6
FY04 revenue: NA
Employees: 1.05 million

Health Care

CANYONLANDS COMMUNITY HEALTH CARE

Page, Ariz.
www.canyonlandschc.org
Serving a generally poor, rural population, Canyonlands is devoting 80% of its IT budget to creating an electronic medical record system to improve care by cutting administrative costs and providing caregivers with improved patient information.
Garrett Martin, IT Director
Sarah Allen, CEO
FY04 revenue: $6.2 million
Employees: 88

EVANSTON NORTHWESTERN HEALTHCARE

Evanston, Ill.
www.enh.org
All patient-related documentation and orders are now paperless throughout the system's three hospitals and 68 doctors' offices. Compliance with the system, traditionally difficult to get from doctors, is 100%.
Thomas W. Smith, CIO
Mark R. Neaman, President and CEO
FY04 revenue: $960 million
Employees: 7,000

INTERMOUNTAIN HEALTH CARE

Salt Lake City
www.ihc.com
Initiated a transformational project to develop electronic medical record and patient care management systems, integrating images and clinical data, as well as voice and video. System will support 21 hospitals, 100 clinics and more than 1,500 physicians.
Marc Probst, CIO and VP of IS
Bill Nelson, President and CEO
FY04 revenue: $2.6 billion
Employees: 26,000

JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Baltimore
www.jhbmc.jhu.edu
In response to caregiver shortage, implemented a single vendor solution to replace a costly best-of-breed model. Combated user resistance through an intense communication campaign that resulted in the computerized physician order-entry system achieving 100% usage.
Deborah E. Prince, Senior Director of IS
Gregory F. Schaffer, President
FY04 revenue: $373 million
Employees: 3,354

LIFESPAN

Providence, R.I.
www.lifespan.org
Believing that "resources to IT projects must be maintained, even in tough times," Lifespan has committed to a huge portfolio of projects, ranging from computerized physician order entry to anytime, anywhere digital imagery viewing to bar-coded patient wristbands.
Carole M. Cotter, CIO and Senior VP
George A. Vecchione, President and CEO
FY04 revenue: $1.02 billion
Employees: 10,847

ST. JOSEPH HEALTH SYSTEM

Orange, Calif.
www.stjhs.org
In order to lead the process change toward a safer patient care model, IT functioned as a high-level consulting group, focusing on strategy. To do this, IT established a new governance model, aggregated multiple vendors and transformed the infrastructure.
Benjamin R. Williams, CIO and Senior VP
Deborah Proctor, President and CEO
FY04 revenue: $3 billion
Employees: 18,000

SENTARA HEALTHCARE

Norfolk, Va.
www.sentara.com
IT leading both the technology and business charge toward paperless medicine, with employee compensation based on patient satisfaction and the achievement of patient safety goals.
Bertram S. Reese, CIO and Corporate VP
David L. Bernd, CEO
FY04 revenue: $1.8 billion
Employees: 13,148

UNIVERSITY OF PITTSBURGH MEDICAL CENTER

Pittsburgh
www.upmc.com
Addressing the health-care crisis, UPMC is attempting to link payers and providers in an integrated-delivery financial system, reconciling the two sides of the health-care coin.
Dan S. Drawbaugh, CIO
Jeffrey A. Romoff, President
FY04 revenue: $5 billion
Employees: 39,000

WELLPOINT

Indianapolis
www.wellpoint.com
Supplied 22,000 physicians with PCs, networked PDAs and e-prescribing software free of charge (at a cost to WellPoint of $42 million). Physicians not limited to using them for WellPoint transactions.
Ron J. Ponder, CIO and Executive VP
Larry C. Glasscock, President and CEO
FY04 revenue: $19.7 billion
Employees: 38,000

Hospitality

HILTON HOTELS

Beverly Hills, Calif.
www.hiltonworldwide.com
Invested in technology during the post-9/11 hospitality industry downturn, creating a single, enterprisewide view of guests in more than 2,200 hotels and offering a suite of e-services to customers.
Tim Harvey, CIO and Senior VP
Stephen Bollenbach, Cochairman and CEO
FY04 revenue: $4.1 billion
Employees: 67,660

MARRIOTT INTERNATIONAL

Washington, D.C.
www.marriott.com
Moved to a single-instance ERP model that supports all business units and brands globally, reducing complexity enterprisewide. Risked all the ills that massive change is heir to.
Carl Wilson, CIO and Executive VP
William J. Shaw, President and COO
FY04 revenue: $10 billion
Employees: 133,000

Insurance/ Real Estate/Legal

AFLAC

Columbus, Ga.
www.aflac.com
Reengineered processes to automate up to 80 distinct business services. Also spun off and funded a special IT group specifically to test, investigate and implement high-risk technologies.
James D. Lester III, CIO and Senior VP
Daniel P. Amos, Chairman and CEO
FY04 revenue: $13.3 billion
Employees: 6,186

CENDANT REAL ESTATE SERVICES GROUP
Parsippany, N.J.
www.cendant.com
To gain competitive advantage, developed software to capture Internet leads from homebuyers and sellers, and to match those leads with sales associates. Data is converted to voice, and the sales reps are then informed by a call to their cell phone.
David Rapsas, Senior VP of IT
Alex Perriello, President and CEO
FY04 revenue: $6.25 billion
Employees: 710

COOPER COMMUNITIES
Rogers, Ariz.
www.cooper-communities.com
A long-standing divide between IT and the business led to a radical siloing of IT, which is now reversed and recentralized, with IT dismantling the various separate infrastructures, moving all the outlying servers to a new computer room under a new IP scheme and investing in Web technologies.
Jim Craig, VP of Information Systems
John Cooper III, President
FY04 revenue: NA
Employees: 650

CUNA MUTUAL GROUP
Madison, Wis.
www.cunamutual.com
Recognizing a failed attempt to develop a CRM system with a vendor, CUNA wrote off the investment and built the system internally, delivering a prototype in less than eight months with only four programmers and less than $1 million in funding.
Sean Fallon, VP of Business Technology
Jeff Post, President and CEO
FY04 revenue: $2.48 billion
Employees: 6,000

FIREMAN'S FUND INSURANCE
Novato, Calif.
www.firemansfund.com
Revamped IT department to focus on projects that create competitive advantage and serve customers rather than maintaining legacy systems. Dedicated large portion of IT budget to the task and involved 100% of IT workforce.
Fred Matteson, CIO and Senior VP
Charles Kavitsky, President and CEO
FY04 revenue: $5 billion
Employees: 4,100

FOLEY & LARDNER
Chicago
www.foley.com
Responding to increasingly national and global demands on its attorneys and their practices, created a virtual law firm using technology to do load balancing in terms of attorneys' work, thereby aligning IT with the firm's business strategy.
Douglas D. Caddell, CIO
Ralf Boër, Chairman and CEO
FY04 revenue: $543 million
Employees: 2,600

THE GUARDIAN LIFE INSURANCE COMPANY OF AMERICA
New York City
www.guardianlife.com
Bucked industry trend toward demutualization and going public. Implements dynamic hedging technology as a core risk management activity in order to assume risk without reinsurance and leverages grid technology to support the volume of calculations necessary to pursue this strategy.
Dennis Callahan, CIO and Executive VP
Dennis J. Manning, President and CEO
FY04 revenue: $7.02 billion
Employees: 5,000, with an additional 2,900 agents in general agency system

MARCUS & MILLICHAP
Encino, Calif.
www.marcusmillichap.com
Used rapid application development to produce a new app for generating listing proposals and marketing packages, and has 95% agent acceptance as opposed to previous 45%.
Richard H. Peltz, CIO
Harvey Green, President and CEO
FY04 revenue: NA
Employees: 1,750

PAUL, HASTINGS, JANOFSKY & WALKER
Los Angeles
www.paulhastings.com
Implemented a business recovery solution that performs full replication of the firm's databases from Los Angeles to New York every four hours, creating a competitive advantage and establishing an industry standard.
Stova Wong, CIO
Seth Zachary, Chairman
FY04 revenue: $609 million
Employees: 2,350

Manufacturing/Process Industries

ARCH COAL
St. Louis
www.archcoal.com
Despite the risk of alienating suppliers by mandating that they participate in its electronic exchange, Arch now does business with 65 suppliers over the Internet in near-real-time mode.
Larry R. Brown, CIO and VP of IS
Steven F. Leer, President and CEO
FY04 revenue: $1.9 billion
Employees: 4,100

BP
Warrenville, Ill.
www.bp.com
Pushed technology boundaries by installing sensor networks that allow real-time monitoring of all assets, including gauging rail car temperatures, and weight and location of hazardous cargoes.
Dr. Phiroz P. Darukhanavala, CTO and VP
Lord John Browne, Group Chief Executive
FY04 revenue: $200 billion +
Employees: 100,000

PILKINGTON NORTH AMERICA
Toledo, Ohio
www.pilkington.com
Faced with transitioning from four or five customers and 20 major products to 11 customers and 100 major products in a few short months, Pilkington transformed its processes and its scheduling system as opposed to increasing factory staff and resources.
Bill McCreary, CIO
Alan Graham, CEO
FY04 revenue: $1.2 billion
Employees: 5,000

SAPPI FINE PAPER NORTH AMERICA
Boston
www.sappi.com
To gain competitive advantage, pushed its 2 p.m. order deadline to 5 p.m. Initiative necessitated automating and integrating logistics and back-end order management system.
Bob Wittstein, CIO and VP of IT
Ronee Hagen, President and CEO
FY04 revenue: $1.38 billion
Employees: 3,054

SMURFIT-STONE CONTAINER
Chicago
www.smurfit-stone.com
IT partnered with the business to standardize design specifications, centralize them and make them available to customers through a secured extranet, thereby enabling customers to create their own containers.
Jim Burdiss, CIO and Senior VP
Patrick J. Moore, Chairman, President and CEO
FY04 revenue: $8.3 billion
Employees: 35,300

SURAT DISTRICT CO-OPERATIVE MILK PRODUCERS' UNION
Surat, India
www.sumul.coop
Using IT to network 1,004 villages involved in milk production with the central cooperative, Surat keeps track of inventory, orders, fulfillment and billing in an environment lacking infrastructure and a tradition of consistent business practice.
Satyen Naik, Assistant Manager of IS
Pramthesh R. Patel, Managing Director
FY04 revenue: $105 million
Employees: 882

Retail/Wholesale

1-800-FLOWERS.COM
Westbury, N.Y.
www.1-800-flowers.com
Implemented an open, service-oriented architecture, replacing legacy applications and making services reusable across multiple channels. Implemented a global load-balancing model that keeps multiple sites in sync in real-time, thereby reducing costs and allowing for a continued growth strategy.
Enzo Micali, CIO
James McCann, Chairman and CEO
FY04 revenue: $604 million
Employees: 2,500

7-ELEVEN
Dallas
www.7-eleven.com
In an intensely competitive environment, 7-Eleven's strategy is to allow individual store operators greater decision-making latitude, supported by an IT system that automates tasks and provides item-by-item sales data.
Keith Morrow, CIO and VP of IS
James W. Keyes, President, CEO and Director
FY04 revenue: $12.2 billion
Employees: 31,688

THE CHARMER SUNBELT GROUP
New York City
www.charmer-sunbelt.com
Built a content management system to align the company's sales initiatives with its customers' sales initiatives. At the same time, provided targeted profitability analyses for restaurateurs to help them determine which wines and spirits to buy according to which will yield the highest profits.
William Healey, Corporate VP of IT
Charles Merinoff, Vice Chairman and CEO
FY04 revenue: $2.75 billion
Employees: 4,500

CIRCUIT CITY
Richmond, Va.
www.circuitcity.com
After losing market share, decided on the wholesale replacement of all in-store systems, changing from highly proprietary and homegrown to open systems based on configured, standard packages. Transformation includes creating a service-oriented architecture.
Michael Jones, CIO and Senior VP
Alan McCollough, CEO
FY04 revenue: $10.47 billion
Employees: 42,258

Continued on Page 84 »

FRESHDIRECT
Long Island City, N.Y.
www.freshdirect.com
To support a growth goal of 250%, redesigned systems to accommodate huge usage pattern swings with shorter supply chains, value-added processing systems and more efficient order aggregation. Reconceptualized business model to be less an e-retailer and more a fresh food provider.
Myles T. Trachtenberg, CTO
Dean Furbush, CEO
FY04 revenue: $100 million +
Employees: 1,400

J.C. PENNEY
Plano, Texas
www.jcpenney.com
With 30% of all window treatments returned due to order entry mistakes, it replaced a paper-intensive process with a system that allows sales associates to configure, price and electronically transmit product orders to the suppliers.
Stephen F. Raish, CIO and Executive VP
Myron (Mike) Ullman III, Chairman and CEO
FY04 revenue: $18.4 billon
Employees: 150,000

LANDS' END
Dodgeville, Wis.
www.landsend.com
Lands' End persuaded its acquirer, Sears, to accept its Web-purchased returns in Sears stores—a huge inventory management challenge for multichannel retailers.
Frank Giannantonio, CIO and Senior VP
Mindy Meads, President and CEO
FY04 revenue: NA
Employees: 7,550

NETWORK SERVICES COMPANY
Mount Prospect, Ill.
www.nsconline.com
Developed supply chain and e-business systems that allow it to work with customers using any electronic medium they wish (XML, EDI, FTP, Internet). Focused on inexpensive and easy-to-scale solutions, automating routine transactions to free up people to focus creatively on exceptions.
Michael Hugos, CIO
R. James Alexy, CEO
FY04 revenue: $603 million
Employees: 116

RUBY TUESDAY
Maryville, Tenn.
www.rubytuesday.com
Put people at center of aggressive growth strategy by simplifying restaurant system—redesigning and standardizing kitchen workflow, ergonomics and communications—so that staff can support growth without huge time and money investment in training.
Nick Ibrahim, CTO and Senior VP
Sandy Beall, Chairman and CEO
FY04 revenue: $1.04 billion
Employees: 38,000

TOSHIBA AMERICA BUSINESS SOLUTIONS
Irvine, Calif.
www.copiers.toshiba.com
Recognized paradigm shift from analog to digital in copier market and accelerated its dealer acquisition strategy. Also developed new e-learning program, increasing its training capacity from 1,200 sales reps per year to more than 10,000.
Randy Miller, CIO and VP
Dennis Eversole, President and CEO
FY04 revenue: NA
Employees: 3,500

Technology Services

VIA TRAINING
Portland, Ore.
www.viatraining.com
To deliver an e-learning product with which Microsoft could live, Via transformed its business system from open source to .Net within 90 days. All the company had to do in that time was rewrite its entire platform.
Paul Irvine, VP of Engineering
Robert Aughenbaugh, President
FY04 revenue: $13.5 million
Employees: 150

Transportation/ Distribution

A. DUIE PYLE
West Chester, Pa.
www.pyleco.com
Embracing total supply chain visibility, company offers real-time, uncensored performance information to customers using satellite technology that enables a direct interface via the Internet between customers, drivers and the overall IT system.
Jim Dobson, Director of IT
Peter Latta, President
FY04 revenue: $170 million
Employees: 1,850

ABF FREIGHT SYSTEM
Fort Smith, Ark.
www.abf.com
To better compete for new business in the underserved less-than-truckload shipping space, ABF developed Internet-based tools to turn customers into collaborators, new applications with browser-based user interfaces and an architecture designed to facilitate simpler migrations to emerging platforms.
David Hardt, CIO
Robert Davidson, President and CEO
FY04 revenue: $1.6 billion
Employees: 13,000

CNF
Palo Alto, Calif.
www.cnf.com
Replaced a functional mainframe system with a Web-based system in order to standardize processes across the business, enhance integration, improve efficiency and support emerging technologies for future projects.
Jacquelyn Barretta, CIO
Douglas W. Stotlar, CEO
FY04 revenue: $3.7 billion
Employees: 24,000

UPS
Atlanta
www.ups.com
In order to differentiate from competition, committed to a strategy of extreme customization of delivery methods, capturing and utilizing individual customer preferences. Information specific to each customer is maintained in databases and matched with their packages.
Dave Barnes, CIO and Senior VP
Michael Eskew, Chairman and CEO
FY04 revenue: $36.6 billion
Employees: 384,000

WASTE MANAGEMENT
Houston
www.wm.com
Developed a tool in-house to indemnify and manage its customers' environmental risks and regulatory compliance responsibilities. Includes a mechanism for capturing approved vendors and preventing the use of unapproved ones.
Lynn Caddell, CIO and Senior VP
David Steiner, CEO
FY04 revenue: $12.5 billion
Employees: 51,700

WINGFOOT COMMERCIAL TIRE SYSTEMS
Fort Smith, Ark.
www.wingfootct.com
Focused on the "information" part of IT by offering tools that allow customers to view real-time inventory levels, production statistics and purchase summaries, and that give them the ability to submit online breakdown service requests—all while keeping IT costs less than 1% of revenue.
Cindy Riley, Director of IT
Brent Copeland, President and COO
FY04 revenue: $600 million
Employees: 2,400

YELLOW ROADWAY
Overland Park, Kan.
www.yellowroadway.com
The strategy for Yellow's industry-transforming acquisition of Roadway was to combine back-office functions, migrating all acquired mainframe-related hardware and data while maintaining separate brand identities. It was accomplished in six months.
Bob Obee, Chief Technology Integration Officer
William D. Zollars, Chairman, President and CEO
FY04 revenue: $6.77 billion
Employees: 52,000

Other

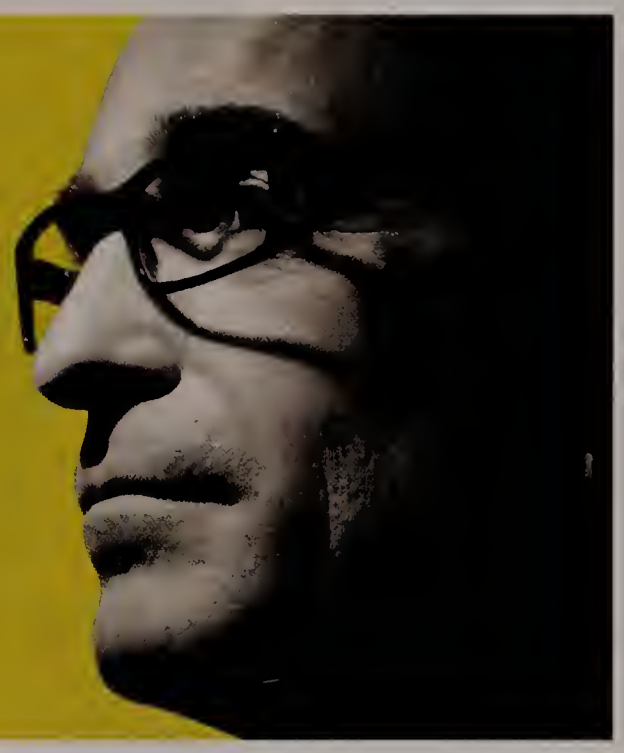
BOY SCOUTS OF AMERICA
Irving, Texas
www.scouting.org
Transformed conservative organization by providing real-time membership information from any computer in the world through a new portal that initially had little top-level buy-in, understanding or funding.
Nathan O. Langston, Director of IS
Roy Williams, Chief Scout Executive
FY04 revenue: $771 million
Employees: 7,013

THE MUSEUM OF MODERN ART
New York City
www.moma.org
Redesigned IT along with the museum, creating a new infrastructure to enable an integrated customer experience with one-stop shopping for memberships, tickets, searches and discount offers.
Steven Peltzman, CIO
Glenn D. Lowry, Director
FY04 revenue: NA
Employees: 750

UNICEF (UNITED NATIONS CHILDREN'S FUND)
New York City
www.unicef.org
Developed a robust communications infrastructure to support 8,000 staff members in more than 300 sites in 158 frequently war-torn and poverty-stricken countries. IT staff members rotate through global support assignments to improve their understanding of technological and cultural complexities.
André Spatz, CIO
Ann M. Veneman, Executive Director
FY04 revenue: $1.7 billion
Employees: 8,000

Quantalog™ U.S. PATENT NO. 5,230,501

THE RESILIENT INFRASTRUCTURE: A GUIDE FOR THE FEARLESS.



For today's enterprise, the only constant is change. And keeping up with change is the ultimate challenge for a business faced with an endless series of paradoxes: making information both secure and available; being reactive and proactive simultaneously; responding quickly to both new threats and new ideas. The solution? A resilient infrastructure that lets you respond as rapidly to opportunity and innovation as you do to threats and disruptions; and where the elements that help keep your company up, running and growing — security, storage and recovery — are firmly in place. This is the ideal that has brought together Symantec and VERITAS to form a single company with a single goal: to help you build a fearless enterprise. For more information visit www.symantec.com/RI.

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National Gypsum CEO Tom Nelson knows well the dangers of investing in new technologies, but despite the risks he pushed for an extranet giving customers unprecedented access to their account data.

I.T. ROCKS the Web

Tom Nelson, the CEO of CIO 100 honoree National Gypsum, guided his company's bold use of the Internet. But he's learned to demand proof of value before embarking on any IT-fueled strategies. BY ELANA VARON

PHOTO BY WAYNE MORRIS

Gypsum is abundant, a mineral that is easily mined and simple to process. Crushed and ground, it's the main ingredient in wallboard. For nearly 80 years, National Gypsum has made wallboard and other building materials according to a business model that has remained relatively unchanged. In an age when outsourcing is a way of corporate life, National Gypsum is vertically integrated—owning its quarries, its production plants and some of its logistics operations.

This CIO 100 honoree, now privately held, has survived some rocky times. Once in the Fortune 500, it was wracked by asbestos lit-

igation (asbestos was used in joint compounds and texture products) and a failed leveraged buyout in the 1980s. In 1990, National Gypsum filed for bankruptcy, reincorporating in 1993. Today, the company's revenue exceeds $1 billion.

When you deal in a low-cost commodity, controlling expenses is job one. But you grow by catering to your customers. And so National Gypsum put its money into the Web. The company built an extranet that provided customers with unprecedented access to data about their orders, shipments and account information. It was a bold move for a traditional business with an IT department full of company veterans, and it's why National Gypsum is a CIO Bold 100 honoree.

"I think if there's a lesson of the late '90s, it's that most of the new companies that were created didn't have enough sense of what the customers were really valuing. You need to try to drill into real metrics and real deliverables."

–NATIONAL GYPSUM CEO TOM NELSON

Back in 1999 when the company came up with the idea for the extranet, every business was looking for a piece of the online action. And in CEO Tom Nelson's view, National Gypsum seemed vulnerable to the emerging B2B auction sites. As an investment banker for Morgan Stanley and a partner with his wife, Anna Spangler, in the venture capital firm Wakefield Group, Nelson had spent most of his career investing in high-tech startups before he joined National Gypsum as its CFO in 1995. He was well-versed in the risks of betting on new technologies. But to not invest in the extranet could put the company at risk of losing market share. Two years later, the company launched the first version of the extranet, which supported about 250 customers. Through subsequent upgrades, the network now supports thousands of users and transmits more than 1 million orders, invoices and statements per year. "Even though this business has been around for a long time, we're constantly trying to innovate," says Nelson.

Nelson talked with *CIO* Senior Editor Elana Varon about what it takes to make a bold decision pay off, the role IT plays in protecting the company's competitive advantage, and what a CEO needs to know about technology.

This is one of a series of interviews with CEOs and other C-level executives about the role of IT in their companies and what they expect from their CIOs.

Coming September 1: Zurich North America Small Business CEO Ray Thomas. For previous View from the Top interviews, go to *www.cio.com*.

CIO: What role does IT play at a company that makes its money from rocks?

Tom Nelson: IT is central to our ability to deliver customer service. We were the first in our industry to centralize our customer service center. We did that over a decade ago. We went from 53 district sales centers to one. Technology is [also] embedded in our manufacturing process. It may seem like a simple product, but there's quite a bit of research and development that goes into it. For example, we've got a system called Automated Data Collection. It monitors our manufacturing process. It's especially useful if we ever have a quality issue. We're able to go back and diagnose what might have been the root causes. Also, there are alarms on this system, which allows us to tell when we've moved out of spec.

What do you look for in an IT-enabled innovation?

It's no different than what we look for in any other business opportunity. How does it impact dealing with the customer? Does it help us become more productive, lower costs, improve quality? I think every project is different, but at the end of the day, return on investment and return on capital are important metrics. They're not always easily definable in the IT world. Some things are hard to measure, especially in our circumstance where we're selling everything we can make. It would be hard to justify [an IT project] based on selling more.

Before you launched the extranet project, you surveyed customers and found they were happy with your service. Some companies would maybe tweak a few things. But you did something that was really different, and that's what made it bold.

If you think back to 1998–1999, there were cooperative groups forming, setting up exchanges on the Internet. We were trying to figure out, How do we play? We saw ourselves—as a lot of corporate America did—as vulnerable.

We decided to work on what we could control: How we interface with our customers. Opening ourselves up to our customers was an important step to giving them better information and, hopefully, tying them in with a longer-term relationship.

What were the extranet project's risks, and what did you do to mitigate them?

The fact that it wouldn't work would be the biggest risk—that our customers suddenly realize we're not that easy to do business with. Certainly, [the key to mitigating the risk] was to get our customers'

world headquarters

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Cisco Systems

SNAPSHOT

National Gypsum

HEADQUARTERS:
Charlotte, N.C.

PRIMARY BUSINESS:
Construction

2004 REVENUE:
More than $1 billion

EMPLOYEES:
2,600

I.T. EXECUTIVES:
Jack Rech, director of e-commerce; and Kurt Stephenson, director of MIS

I.T. EMPLOYEES:
34

I.T. BUDGET:
$9.3 million

voices heard while we were building it and to go through a pretty extensive trial period with a handful of leading lights among our customers.

Another risk would be that if it failed, future investments would be compromised because here IT spent all these resources and didn't deliver. Our customers would become skeptical of any other types of enhancement: Listen, we spent the time trying to understand your extranet, and it just didn't work for us.

So when it came to executing this project, what were you concerned about? And how did you address those concerns?
We surveyed the landscape of other companies going through similar changes. The bulk of them were using significant outside resources. We interviewed consultants who were skeptical that we would be able to deliver.

But we had people who knew our existing systems, who knew our customers, and who knew what we were trying to achieve. And we realized that at the end of the day, the skills we had in IT, coupled with the understanding [IT had] of the marketplace, were going to be more important to the success of the project. There was a cost advantage to doing it ourselves, and there was a control advantage. These were people that would be dedicated to our project and that had skin in the game.

The sales group, on the front lines with customers, was initially skeptical. What did you do to foster alignment between business leaders and IT?
When we put the [extranet] team together, we took people from all over the company, including people from the sales and marketing area. Once they became inculcated in the team, they were better able to evangelize with the groups that they've primarily worked with in the past. [Also,] we have a lot of longevity within the IT [department]. They know our manufacturing process, they know our customers, they understand the external factors that impact our business, and they've developed personal relationships with people in different functional areas.

If you lived in this company every day, you'd see there are a lot of cross-functional teams with everything we do. It builds better alignment. We make better decisions, and we have more success in the marketplace.

Has your view of IT changed since you came to the company?
I think most of corporate America's view of IT has changed since 1999. Then, there was a view that the world was going to change overnight. Clearly, long term, we're going to have significant changes in the marketplace wrought by use of information technology. But we still need to ask tough questions before we commit resources.

Has that made you more cautious about making IT investments now?
From a venture capital perspective, it has. I think if there's a lesson of the late '90s, it's that most of the new companies that were created didn't have enough sense of what the customers were really valuing. You need to try to drill into real metrics and real deliverables.

So what questions about IT investments are you more concerned about?
One, the venture capital experience has heightened the concerns about the financial stability of IT vendors, especially startups or small companies. Two, do customers really value this enhancement [that's proposed]? Show me data. Three, bottom line, does this project help us grow revenue, improve quality, lower cost or improve productivity? CIO

Senior Editor Elana Varon can be reached at *evaron@cio.com*.

What's BOLD in... Manufacturing

Business intelligence | Extending ERP systems by building Web-based portals that contain important metrics and information about suppliers, customers and the state of the business.

Event-driven architectures | Creating systems that track important events—say, low supplies at a warehouse—and sending notifications to people who can do something about it. Some have intelligent notification. For example, if you don't respond in 30 minutes, an e-mail goes to your boss.

Product data management | Getting product data integrated across the company from design to manufacturing to selling to logistics and even product returns. Hard to do, and not many companies have done it. Today, most focus on the design process. But it's the next big thing.

Managing the outsourcing network | Many companies now outsource manufacturing, but few have good systems to manage suppliers and share information and do collaboration. Working on this piece of the outsourcing puzzle is bold.

–Christopher Koch

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What Do You Know About Being BOLD?

Part of the **CIO Leadership Agenda** series

Ten questions and answers based on the responses to a survey of our Bold 100 honorees

BY EDWARD PREWITT

You may feel bold. Others may think you bold. But boldness without information is merely bluster. True boldness is a knowledge-based practice. That is why we asked our Bold 100 honorees about what they do and don't do in the pursuit of their bold endeavors. We believe boldness is learnable.

TURN THE PAGE, TAKE THE QUIZ »

Questions

T F **1.** Difficult economic times and the unsettled state of the world have made most organizations—even the bold ones—increasingly risk-averse.

T F **2.** Traditionally resistant to change, hamstrung by regulation and hampered by bureaucracy, nonprofit or governmental organizations are rarely congenial to bold initiatives.

T F **3.** By virtue of their size, small enterprises are able to act boldly more often than large organizations.

T F **4.** To whom a CIO reports—the CEO, COO or CFO—makes a significant difference in his or her ability to act boldly.

T F **5.** It's much harder to act boldly if your budget is being cut.

T F **6.** Boldness is a top-down thing, with bold ideas and initiatives emerging most often from the top of an organization.

T F **7.** CFOs are usually more resistant to bold initiatives than any other party.

T F **8.** User buy-in is the most important factor in the success of any bold business initiative.

T F **9.** The final decision to go ahead with a bold move always comes down to the executive's gut instincts.

T F **10.** The essential ingredient in creating a persistently bold business culture is having a standing R&D group, or at least a budget line devoted to experimentation.

Visit agenda.cio.com for more Leadership Agenda articles

Answers

1. False. At least, not according to our Bold 100. Fifty-four percent of our respondents said their organizations' willingness to assume risk increased over the past two years. Only 9 percent said it decreased, and 37 percent said it stayed the same.

2. False. Federal, state and local government agencies account for 10 percent of the Bold 100. Education, which is primarily a nonprofit sector, makes up another 7 percent.

3. False. Companies reporting annual revenue of $5 billion or more make up 36 percent of the Bold 100, while companies with revenue under $500 million compose 21 percent of the Bold 100.

4. False (unless you're reporting to your CFO). The reporting relationships of CIOs in the Bold 100 are roughly comparable to those in our "State of the CIO 2004" survey of more than 500 IT executives. (Find "The State of the CIO 2004" survey online at *www.cio.com/state*.) In both surveys, 40 percent of CIOs reported to their CEOs. The main difference is that only 18 percent of the Bold 100 CIOs reported to CFOs, whereas 30 percent of CIOs reported to CFOs in "The State of the CIO 2004" survey.

5. True. Over the past two years, more than half the Bold 100 saw their IT budgets grow. Only 20 percent of the Bold 100 said their IT budget decreased last year, and 25 percent said it decreased over the past two years.

6. True. Fifty-six percent of the Bold 100 said their bold initiatives originated with C-level executives. Twenty percent of those initiatives came from the CIO. None came from the CFO.

7. False. Forty-eight percent of the Bold 100 said the greatest opposition comes from business leaders or users. We can stop beating up on the CFO. He's the villain only 11 percent of the time.

8. False. While no one would gainsay the importance of user buy-in, 73 percent of the Bold 100 say support from top business executives was the most important success factor, followed by having a strong business champion (52 percent), aggressive leadership (49 percent) and excellent project management (49 percent). User buy-in was far down the list at 28 percent.

9. False. Don't trust your gut. Only 19 percent of the Bold 100 do. The most important factor in making bold decisions is the urgency of the business need (82 percent).

10. False. Only 5 percent of our Bold 100 identified a standing R&D group as essential, and only 2 percent fingered the budget line. Overwhelmingly, 85 percent of our Bold 100 named good business-IT alignment as the sine qua non of cultural boldness. Hard on its heels (at 79 percent) was aggressive leadership. Fifty-nine percent of our respondents cited agility (the same percentage cited good communication). Nothing else is close. CIO

Executive Editor Edward Prewitt can be reached at *eprewitt@cio.com*.

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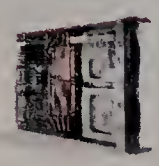

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FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS

Edited by Christopher Lindquist
clindquist@cio.com

Strategic HR Integration

Savvy CIOs can find ROI opportunities in connecting disparate HR systems into a cohesive whole

BY GALEN GRUMAN

HUMAN RESOURCES | Call it dealing with the whole person. Disconnected strategic human resources applications—incentive management, employee performance management, workforce scheduling, and training and learning management—offer CIOs an integration opportunity that could bring new benefits to the enterprise. Merge those applications into a closed-loop system, analysts say, and the enterprise can reap the same kinds of rewards with its "human capital" management as it has with its supply chain management. And CIOs could help drive real ROI for the company by approaching HR systems strategically.

"If you don't integrate these systems, the business will still run today," says Sandra Lee, director of talent management at biotech firm Invitrogen. "But if you don't start now for the long term, you're going to be paying for it a few years down the line."

Past HR-oriented IT efforts focused on operational systems such as payroll, usually with just minor CIO involvement, but analysts and consultants say strategic HR applications have more potential to benefit the enterprise, especially as baby boomers retire during the next decade, creating labor and knowledge shortages. When that happens, business success will ride on making the best use of staff. Compliance requirements such as Sarbanes-Oxley have also caused some organizations to examine HR management as a whole, particularly

ILLUSTRATIONS BY FERRUCCIO SARDELLA

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compliance-oriented training, and that has helped raise the profile of the greater strategic HR need, analysts add.

With the CIO's help, HR is also now ready to tackle strategic issues such as performance management, training and succession planning, says Lisa Rowan, program manager for HR management and staffing services at IDC (a sister company to *CIO*'s publisher). That's because the HR information systems for employee records, payroll and benefits management are now largely in place or outsourced. "They're getting to the point where the HR information system is taking care of the administrative burden," she says, freeing HR executives to tackle strategic issues. CIOs should help champion and lead these efforts, she says, rather than continue the past strategy of letting HR staff fend for themselves, since a strategic HR IT effort could greatly help the entire organization.

Piecing It Together

Today, the various strategic HR applications—often called human capital management applications by vendors—are regularly installed as standalone departmental applications with minimal CIO involvement. "A lot of people put in a bunch of single components and never look at the whole system,"

The Changing Talent Landscape

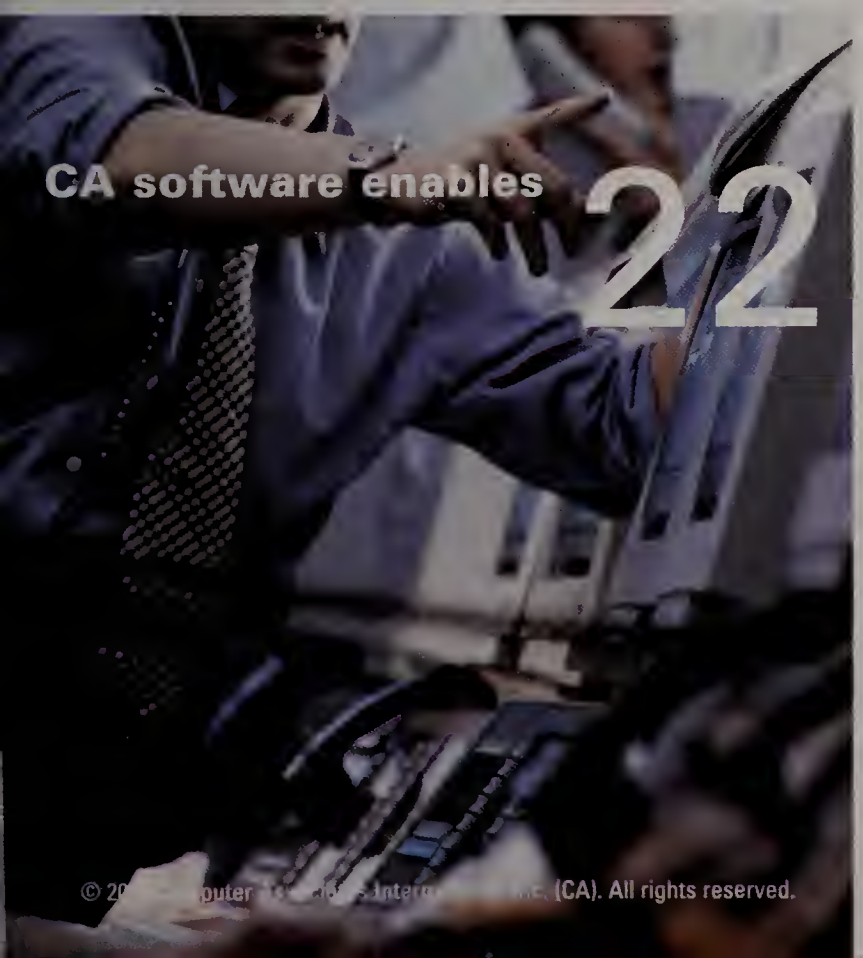
Why HR is strategic again

In the late 1990s, as the Internet boom placed a premium on finding young, energetic, skilled employees, the HR department became the center of the action. During the boom, HR organizations tried to get a seat at the strategic management table, striving to join as "chief people officers." But as the economy shrank—along with headcounts and payroll—HR ceased to be considered strategic.

That's changing now as the economy rebounds and a talent shortage looms. U.S. Labor Department reports show continued firming of the job market. And after several years of low turnout, recent talent-management conferences have experienced record attendance, according to IDC analyst Lisa Rowan.

During the next five years, fewer people are expected to enter the U.S. workforce than retire from it, which will reduce the labor pool and force companies to work harder to find and retain needed employees. And many of those retirees are baby boomers whose deep industry knowledge will depart with them, since thinned workforces often mean a lack of trained replacements waiting in the wings, says Sandra Lee, director of talent management at biotech firm Invitrogen.

This presents an opportunity for strategic HR thinking—and strategic IT involvement in such HR applications. Administrative functions such as payroll and benefits administration have been outsourced or automated, and a new generation of HR leaders have come from business management backgrounds rather than traditional HR—making them ideal partners for the CIO, who likewise is focused on creating business benefit rather than merely administering services. –*G.G.*



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says Larry Carr, a business professor at Babson College who's writing a book on management control systems.

Linking some or all of these systems can allow more intelligent use of HR applications. For instance, using an integrated human capital management system, a company could assess hiring strategies by tracking new employees' performances after they are hired or apply incentives methodically and automatically based on "soft" goals such as effective leadership.

The only way to accomplish all of this, however, is through integration. Connect the HR technology and process dots, and the opportunities for dramatic breakthroughs in talent management become apparent, says Tom Kraack, managing partner for workforce transformation at Accenture. "For the first time, you can imagine a huge change in the employee equivalent of time to market."

One model for such technology and process integration is supply chain management, which also links disparate activities that affect each other. IBM, for instance, is integrating its internal strategic HR tools along the supply chain model, using a database of roughly 6,000 skills that forms the taxonomy for managing hiring, deployment and staff development. By creating its own taxonomy, IBM assures that all tools and managers are working from the same assumptions, says Frank Persico, director of learning at IBM. This lets the company know what skills it needs for consulting projects or manufacturing positions so that the recruiting system can screen for those skills, as can internal scheduling tools, says Dan Forno, IBM's vice president for global operations workforce optimization. It also lets managers identify skill gaps so that they can focus staff development, training, incentives and promotions to coordinate with the skills needed, Persico says.

Other efforts are less encompassing. For example, Symbol Technologies has linked its internal e-learning system with order management, which stops resellers from ordering parts for certain products until they complete required courses for those items, says Josh Bersin, president and

Read the Fine—and Fast—Print

PRINTING | With the price of color laser models dropping below $200, ink-jets being given away free as come-ons for computer stores and even cheap units able to deliver decent photo-quality prints, it's hard to find anything worth printing about printers anymore. But a recent demonstration by Brother Industries and separate news from MIT and Hewlett-Packard recently made printers exciting again.

This June at the 2005 World Exposition in Aichi, Japan, Brother engineers demonstrated a prototype ink-jet printer that can reportedly spit out paper in a 170-page-per-minute blur. The key is a static head that prints across an entire sheet at once instead of the more typical moving head, which slides across a page for each thin line of print. By linking multiple heads, the technology could in theory provide super high-speed, high-quality color printing all the way up to poster size and beyond. Brother, however, won't comment on when the technology might make it into commercial printers nor on how much the printers using the technology might cost. Hewlett-Packard also recently announced its own head game: a new line of printers with integrated print heads (the heads previously lived on ink cartridges). The new printers will reportedly produce prints more cheaply and quickly than previous models.

While Brother and HP concentrate on speed and cost, MIT is thinking small—tiny, in fact. The school's Department of Materials Science and Engineering recently announced a nano-printing technique that someday might let scientists create and reproduce nano-size devices quickly and at a much lower cost than current techniques can. The MIT technology, called supramolecular nano-stamping, uses single strands of DNA that self-assemble to duplicate nano-scale patterns. Duplicates can then be used as patterns themselves, exponentially increasing the speed of the printing-like process. Once perfected and commercialized, the technique may prove useful for the creation of DNA microarrays, which can test for susceptibility to genetic diseases. The technology might also one day be able to duplicate nano-scale transistors and wires for other applications, the researchers claim.

–Christopher Lindquist

founder of the consultancy Bersin & Associates, which helped develop the system.

Integration Challenges

If all this unification sounds like an integration project, it is. But the prospect isn't as scary as some other integration efforts. "The investment is significantly less than ERP. Typically, human capital management apps do not have the number of interfaces, the mission-critical or operational-risk characteristics, nor the number of administrative users characteristic of a broad-based ERP application," says Accenture's Kraack. The effort is also much less than that required to deliver operational human resource information systems (HRIS), whose complexity is more like ERP, he adds.

Also, "you need to build or buy applications that are oriented to connection with others," says IBM's Forno. There is no ready way to tell if an application is connection-oriented, Kraack says, but CIOs can investigate a vendor's previous delivery of and thinking on connectivity, as well as look for a core data architecture and ease of configuration. Because most human capital management providers offer "siloed applications intended primarily to serve a fairly linear function," IT may need to rely on a system integrator who has already figured out the connectivity approach, he says. Fortunately, the immaturity of some aspects of the human capital management systems market gives enterprises one advantage, says IDC's Rowan: "Most vendors will support the data model of the client's choice" rather than impose their own.

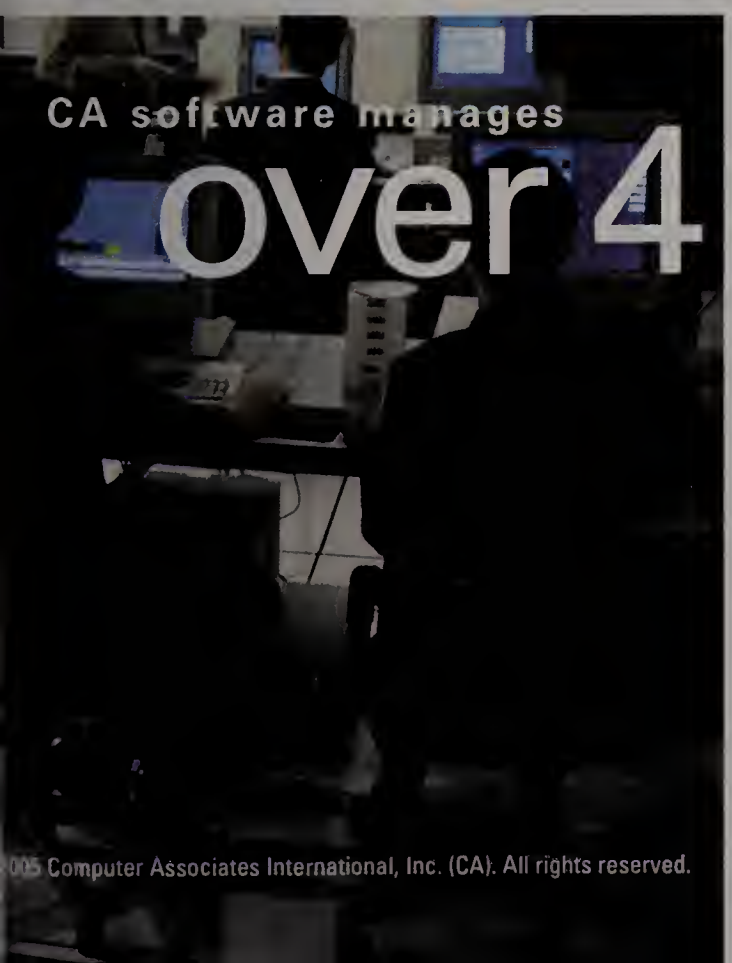
Kraack says that no vendor has worked out world-class end-to-end functionality across the whole of talent management yet, even though both PeopleSoft and Siebel Systems offer human capital management products within their ERP suites. As such, he advises enterprises to use the "best in class" for each silo and build an integrated capability. Other analysts concur. "The ERP players have a little bit of an advantage of being closer to closing the loop, but they're not as far along as I'd like to see them," says Judy Sweeney, a research director at AMR Research.

The lack of strong presence by ERP vendors explains why the HR market still includes dozens of small vendors that specialize in a few application areas—often within specific industries. However, some vendors are beginning to see integration as an opportunity. The learning management providers have taken the lead, Kraack and Bersin say, particularly Plateau Systems, Saba and SumTotal. Performance management provider SuccessFactors has also moved in the integration direction. But by and large, these companies don't have the resources to develop and maintain a full suite of quality applications, Bersin warns.

Still, for some companies, a suboptimal suite is a better choice than in-house integration efforts. For example, the staffing firm Randstad North America uses the Cornerstone suite to integrate learning management with developmental planning (of which succession planning is a part), since the company has 40 percent annual turnover in its sales force—a little lower than the industry's average of about 50 percent, says Vince Eugenio, Randstad's chief learning officer—and needs

Fewer than **33%** of companies use any people metrics, such as retention of key staff or staff training, in the compensation plans for their leadership teams.

SOURCE: 2005 survey of 320 organizations by IBM Business Consulting Human Capital Practice



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to manage that churn. Other companies have better components for functions such as performance management, says Eugenio, but "getting the two systems to talk to each other could be a nightmare. I would sacrifice quality to avoid [doing the] integration [myself]." Integration gets harder, he says, the more components you introduce, and thus the more connections you have to maintain.

Invitrogen is also using one provider for its system. The company has put in place a performance management system from SuccessFactors that it plans to link to a succession planning tool and a compensation management tool, also from SuccessFactors. Linking the two will alert managers when their salary plans don't match employees' performance or fall outside of guidelines for performance levels. This helps ensure that employees are treated consistently and fairly, yet lets managers implement exceptions as needed, Lee says.

The decision to go with one vendor was a "gut call," she notes, since Invitrogen has been growing too quickly for the company to take time to do a formal ROI analysis of integrating multiple products versus buying from one vendor. Lee expects that the company's just-hired HR information systems manager will have to integrate products from other vendors—likely the HRIS, the recruitment management system, or the learning management system—at some point, but "my goal is to minimize the number of integration points."

CIOs on the Sidelines

Strategic HR applications have largely been a backwater, as organizations have mainly focused on operational issues such as payroll and benefits administration. The HR profession in recent years has been diminished as such operations have been outsourced or automated, notes Bersin, leading both to fewer HR staff and less reliance by company management on HR for strategic guidance on issues such as how to maximize the workforce's potential. And because HR has not been considered strategic and has failed to develop the tight relationships with IT that other business units often foster, CIOs typically have not paid attention to HR systems. That in turn has kept strategic HR off the CIO's agenda.

"In HR and learning, IT is less involved. I'm surprised how naive IT can be," Bersin says of IT's tendency to make decisions based on existing vendor relationships rather than on assessing actual needs and vendor offerings. "They say, 'Oh, we're a PeopleSoft shop? Let's buy all PeopleSoft stuff,'" Bersin says.

Instead, CIOs should take HR technology integration and strategy much more seriously than they have in the past, observers agree. "The medium of management, of planning, of control is IT," says Babson's Carr, making it a natural center for strategic initiatives such as integrated human capital management. Even though HR departments have often been left to fend for themselves and CIOs haven't always understood which applications could make HR more effective, "the CIO can be a real catalyst for change," says Accenture's Kraack. "If there's an effective HR partner, you go there. If not, you go to the business manager—after all, the people who feel the pain are the general managers of the lines of business. Ideally, it's a holy triangle of the three."

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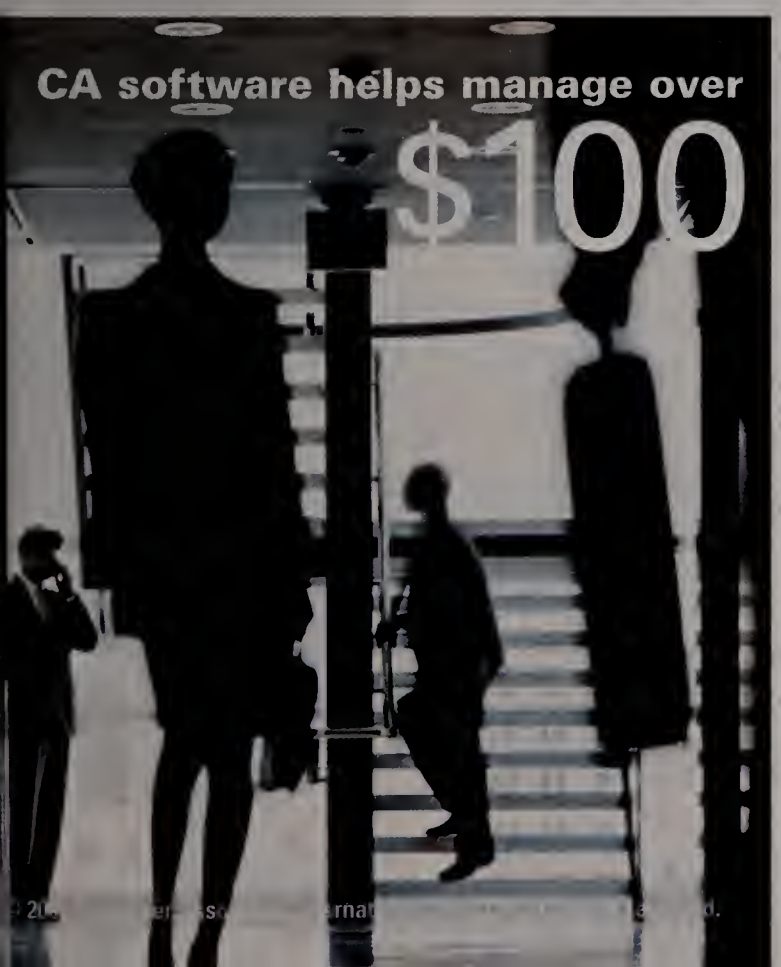
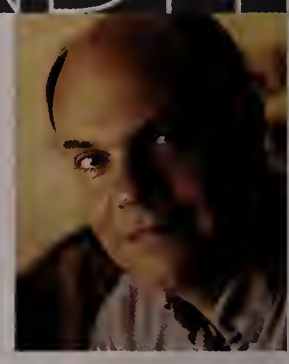
Galen Gruman, a San Francisco-based freelancer, can be reached at *ggruman@zangogroup.com*.





Don't Debate: Innovate!

Global competition is a good thing... if we're prepared to compete

BY ERIC S. KNORR

INNOVATION | When I was still cutting my teeth as a tech journalist, I had an idea for a politically incorrect article that would explore why a disproportionate number of the heavy-duty technologists in Silicon Valley were originally from India or Taiwan.

In those days I was reading Robert Reich's *The Work of Nations*, which argues that national economies are dissolving as borderless corporate giants straddle the globe. Yet living near Silicon Valley, I felt I was at the center of that world, chronicling the latest innovations before anyone else. The idea that the best and the brightest were flocking here from the four corners of the earth added to the excitement.

That influx never stopped—and if the cap on H-1B visas were lifted, more would come. But as *New York Times* columnist Thomas Friedman observes in his book *The World Is Flat*, in a globally networked world, the special advantages of living and working in the United States are melting away. Thanks to intercontinental fiber and the cheap voice and data traffic that fills it, innovators such as the people I met almost 20 years ago can now stay where they are and, increasingly, enjoy a standard of living that rivals our own.

To those of us who have seen offshoring up close, Friedman's book is not exactly a revelation. Complaining about the outflow of work to India and China is beside the point; it's just part of global reality. The challenge today is to figure out where we stand in that new reality.

The pat answer is that the United States by nature will always lead in innovation. But there's nothing sacred about Yankee ingenuity. As Reich said 14 years ago, the decisions multinational companies make have little to do with nationality. Today the giants move quicker—as can any company plugged into the global network. And they will buy good ideas wherever they find them.

To stay the world's leading innovator, the United States needs to increase its innovation output, not merely hold the line. I admit that with the steep drop in U.S. computer science majors, the prospects look somewhat grim. Nor have I the faintest notion how to counter a strange new twist in the culture—one that arrives at just the wrong time—that rejects science in favor of dogma and swagger. But at least we can make a stronger, smarter effort to cultivate, recognize and reward homegrown innovation.

The urgency of doing that was brought home to me in 2002, when a venture capitalist told me about his new business: selling off failing startups. Where were the buyers? China, Korea, Taiwan and other Asian countries that knew a bargain.

Those startups may have been in trouble, but in many cases their technology was solid. They were victims of the post-boom retreat, watching helplessly as the herd galloped away from high-tech. On opposite shores, canny observers snapped them up.

To stay the world's leading innovator, the United States needs to increase its innovation output, not merely hold the line.

The boom's hangover is gone now, VC purse strings have loosened somewhat, and Silicon Valley is finding its footing in a new global landscape. Most people I know have accepted that panicking about offshoring is beside the point. The United States is still the world's largest technology market. Not only do we know best how to sell into that market, we also understand better than anyone else how to craft new technologies that fit into our complex mix of customer technologies and cultures.

If we behave like a herd and flee from troubled product categories, we'll lose our edge. If we panic about jobs or innovation going elsewhere, we'll be paralyzed. But if we examine each innovation in its own right, with special emphasis on ideas with unique value for the largest technology-consuming country in the world, we'll have a fighting chance to stay on top.

Eric S. Knorr is executive editor at large at *Infoworld*. He can be reached at *eknorr@pacbell.net*.

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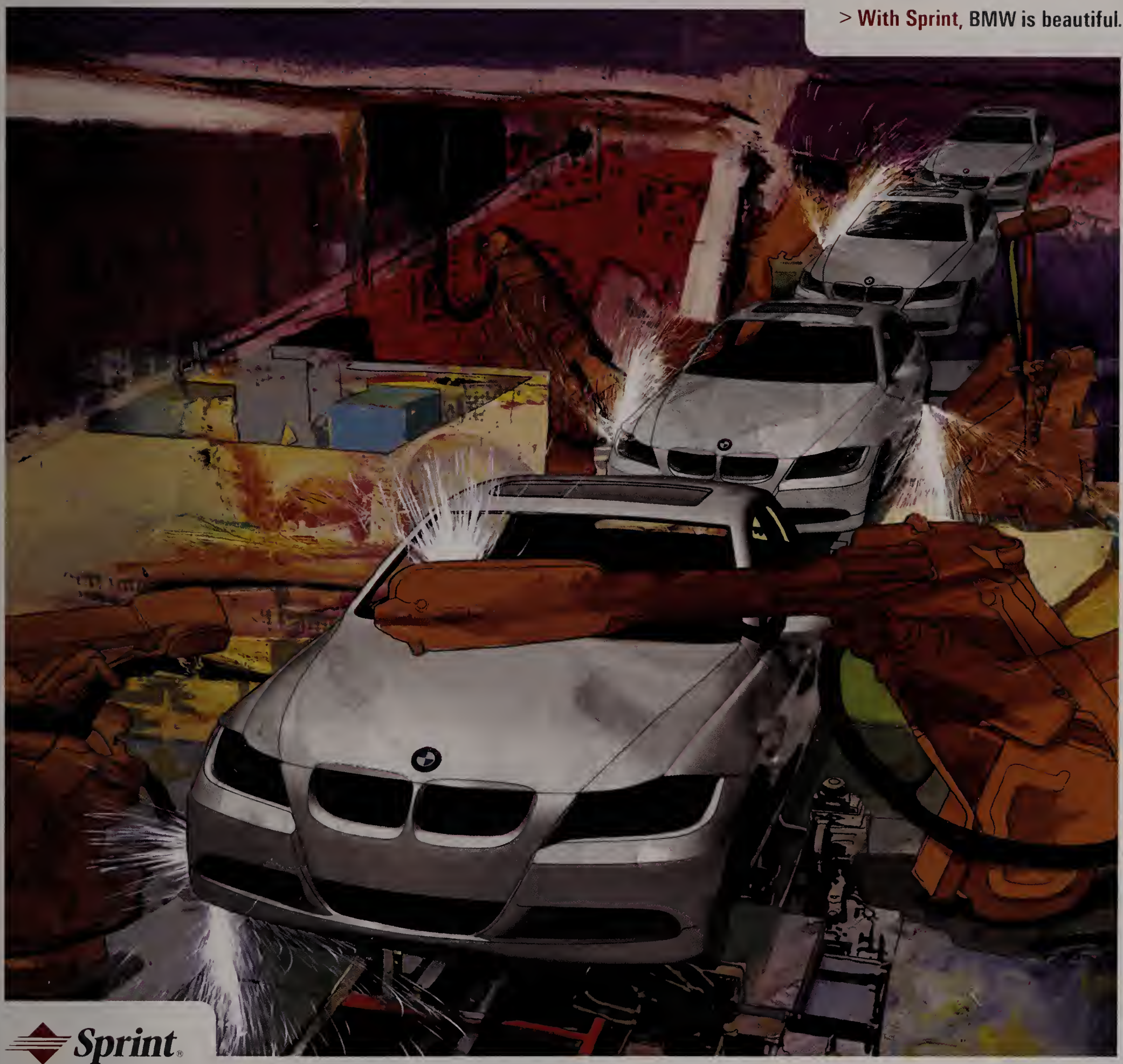

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Needed: Good Writers

The inability of the American worker to write a good sentence is costing American business good money

Frequently in this column, I have voiced my concerns about the disappearing science, technology, engineering and math skills that the American workforce needs in order to be productive in the 21st-century economy.

A 2004 report from the National Commission on Writing suggests that writing skills should be added to that critical skill set. The commission, which reports annually to Congress on the proficiency of writing in America, partnered with Business Roundtable to produce its second report, "Writing: A Ticket to Work...Or a Ticket Out," about a year ago, and it has just released a similar report for the government.

The findings of these reports are as follows:

- Good writing is a threshold skill for employment and promotion.
- Poor writers most likely will not be hired.
- Two-thirds of salaried workers in large American companies have some writing responsibility.
- Writing deficiencies cost American business as much as $3.1 billion annually.

What is "writing" in terms of 21st-century American business? Formal reports, memos, letters and technical reports would come to the top of most lists. But in this electronics-dominated world of ours, the commission reports rank e-mail as the number-one form of writing in America, followed closely by presentation/visual writing.

One respondent to the "Ticket to Work" report wrote, "We're inundated daily with e-mail, and people have to learn to think in 'core points.' We need presentation skills on the same basis. Most of us have experienced 'death by PowerPoint.'" And often, I find, by the dreaded "reply to all" button!

What's the writing proficiency of the American workforce? Approximately 34 percent of businesses claim that less than a third of their current workforce has adequate writing skills.

If you would like a copy of the report, write me a short note!

Gary J. Beach

Gary Beach, Publisher
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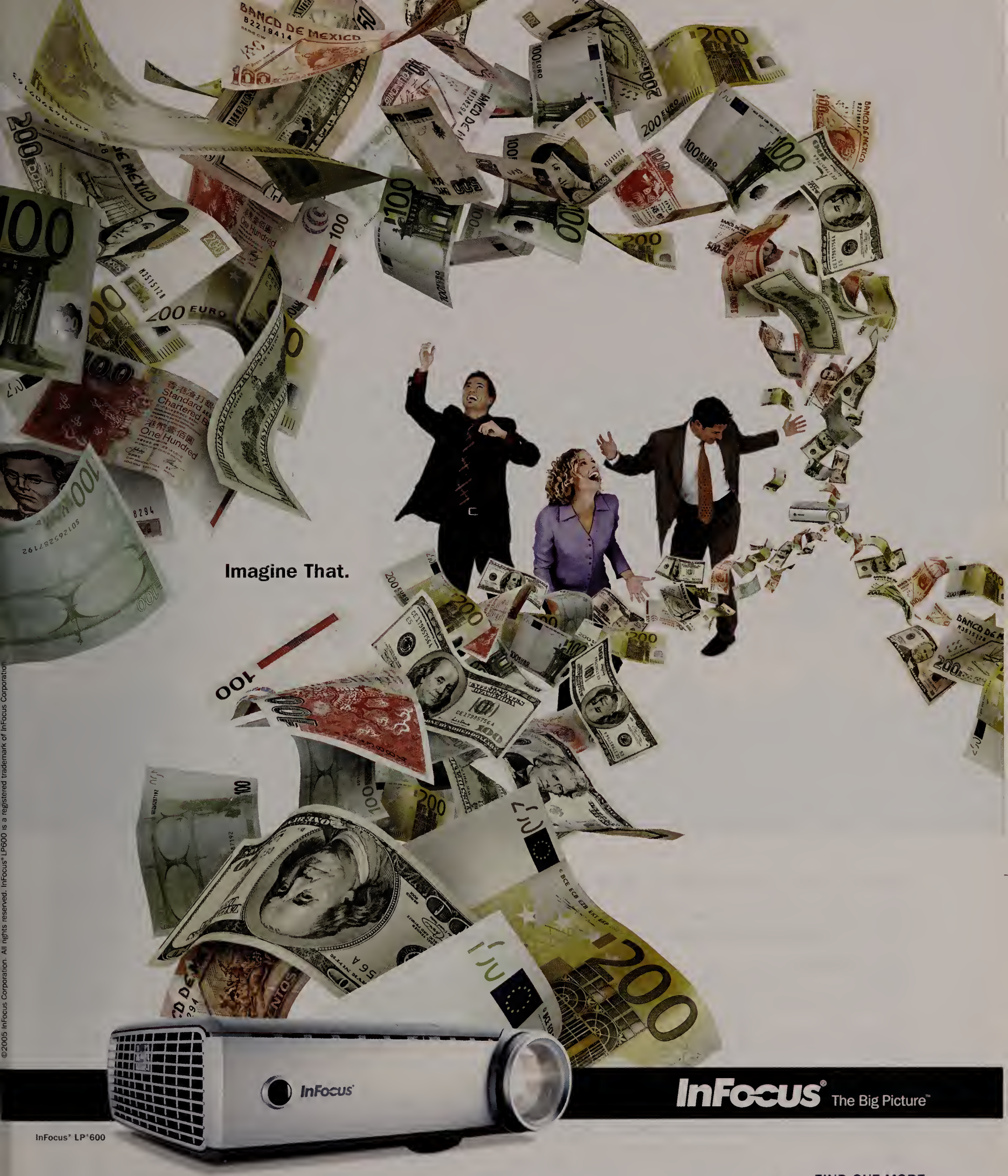

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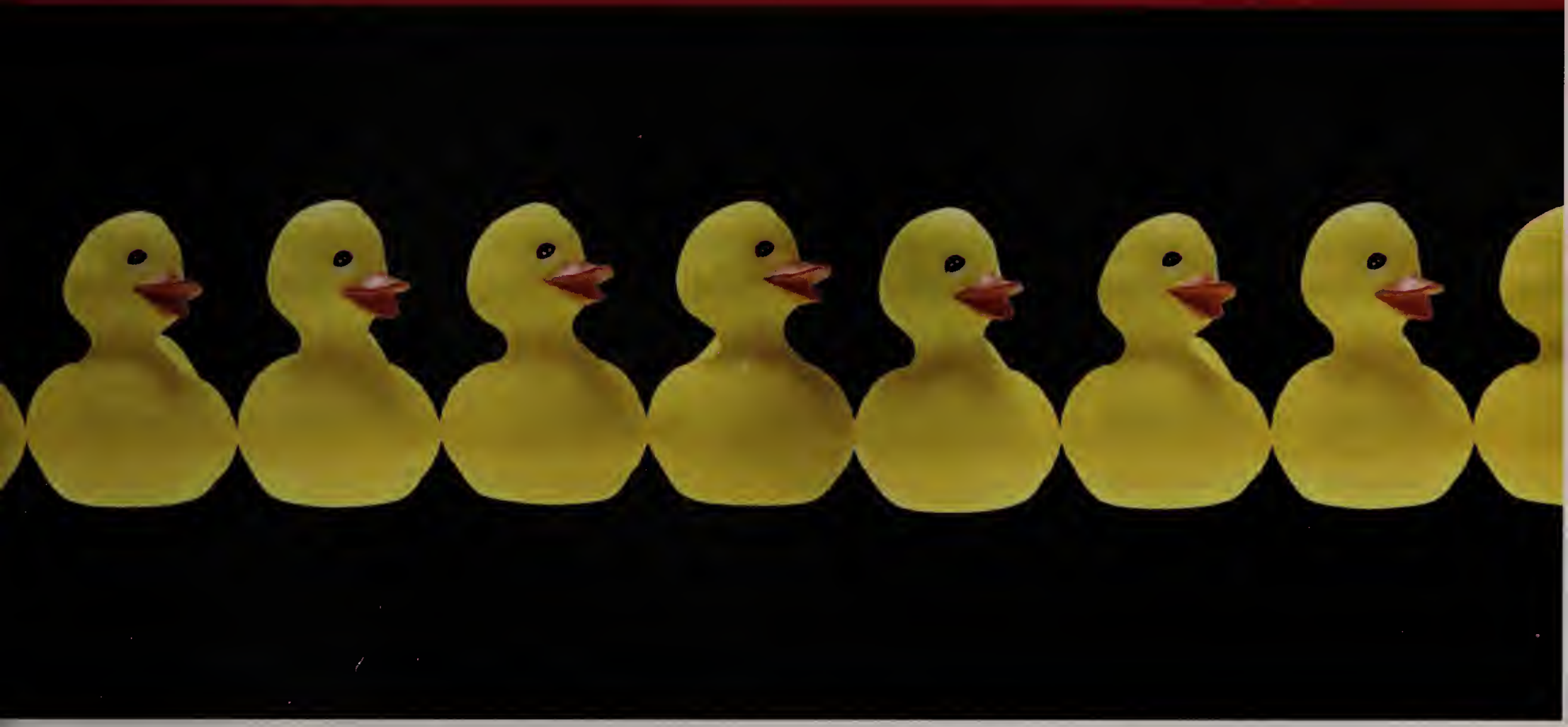

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The BOLD 100

40 | THE BOLD CHOICE

TO BE BOLD is to assume risk; without risk, there's no reward. But no reward can justify an endeavor lacking a plan to transfer, diminish or distribute risk. Some of our CIO 100 honorees mitigated risk through relentless testing of new applications; others refused to sunset old systems until the new ones had been fully accepted. In most cases, change was introduced incrementally. In almost every case, business leaders and end users were brought into the process early. In all cases, the mitigation plan was kept firmly in the project's foreground. *By David Rosenbaum*

46 | 8 TIPS FOR BOLD LEADERSHIP

BEING A BOLD leader is more complicated than being decisive and taking risks. Mitigating that risk is one of the eight characteristics of bold leadership that we have identified from among our CIO 100 honorees. Others include building credibility, getting to know your customers, sticking by your guns, picking your battles, building consensus and identifying change agents. *By Alice Dragoon*

52 | A NEW BLUEPRINT FOR I.T.

A SERVICE ORIENTED ARCHITECTURE (SOA) isn't a technology; it's a way of doing business. It can even be a way of transforming it. Done correctly, and for the right reasons, an SOA can save money and increase agility. But getting to an SOA requires bold thinking and even bolder action. Trails are already being blazed. And our bold honorees have left a few bread crumbs for you to follow. *By Christopher Lindquist*

60 | PUTTING PEOPLE IN THEIR (RIGHT) PLACE

BOLD BUSINESS INITIATIVES don't pay off on paper. People make or break them. IT departments often have to be reinvented and employees retrained so that companies can blaze new paths to fortune. If your staff isn't structured to support a new strategy, if your people lack the necessary skills, or if they resist change, whatever you want to do will fail. CIO 100 honorees describe what they did to shake up their IT organizations to achieve goals and improve performance. *By Meridith Levinson*

66 | AT PLAY IN THE FIELDS OF THE NEW

A NEW MACHINE or a cutting-edge technology is almost never the answer to a CIO's problems. But the intelligent use of bold technology can offer companies a chance to achieve significant competitive advantage or save significant money. The keys to using technology boldly and successfully, according to this year's CIO 100, are risk management, change management and gaining your users' trust. *By Christopher Lindquist*

72 | BOLD ON A BUDGET

FOR SOME COMPANIES, boldness must come cheap. Here's how some of our CIO 100 honorees use IT to innovate without breaking the bank, including relying on beta versions of software and developing prototypes with virtually no budget. *By Ben Worthen*

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FACTS AND FIGURES on the Bold 100, their CEOs and IT heads, and summaries of their winning strategies.

86 | I.T. ROCKS THE WEB

CIO 100 HONOREE National Gypsum is an old-line company with a business model that hasn't changed much through its 80 years. But CEO Tom Nelson has led a Web-based effort that has transformed the way it works with customers. This interview, part of our View From the Top series, shows that while Nelson believes in the power of IT to drive its customer service initiatives, bold initiatives still require solid metrics and proof of value. *By Elana Varon*

93 | WHAT DO YOU KNOW ABOUT BEING BOLD?

THE QUESTIONS AND ANSWERS in this quiz are based on the responses to a survey conducted of our Bold 100 honorees. The whole survey can be seen at *www.cio.com/research*. *By Edward Prewitt*

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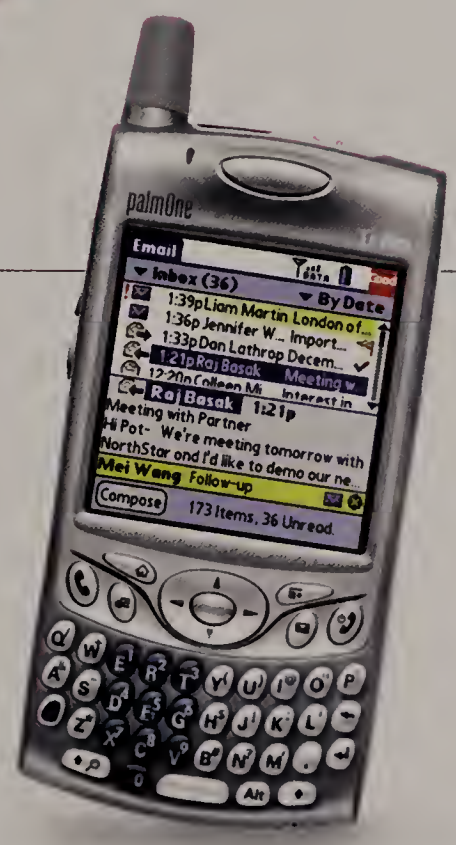

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